

Air
CONQUEST

by
W. Jefferson Davis



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AIR CONQUEST

AWARDED

One Thousand Dollar 1930 Aeronautical Publication
Award, by the Aero Educational Research Organiza-
tion, for the most timely contribution to
Aeronautical Literature

AERONAUTICAL PUBLICATION AWARD FOR 1930

After the Guggenheim Fund—What?

SCIENTIFIC FIRST AID to the aeronautical industry during its experimental period was accomplished primarily through the founding of the Guggenheim Schools of Aeronautics such as the California Institute of Technology, Stanford, and New York University.

EDUCATIONAL SECOND AID in the period of sounder stabilization is the medium through which the Industry, Institutions of Aeronautical Science and the Public can be linked together for the expansion of Aeronautics.

As an illustration of what such an allied group might achieve, it is thought that an independent proving laboratory affiliated with all educational institutions and all outstanding commercial and engineering organizations in aeronautics, but controlled by none, under an administrative board of trustees composed of competent business leaders, would consummate a merger for the general good of the industry and the public.

The whole industry would be aided, institutions of learning furnished practical commercial contact, the public served, improvements and inventions of universal value created and tested, investment confidence regained, and the West Coast would become something more than the nation's hangar.

This emphasis on education accords with the original aim which the founders of A. E. R. O. had in mind when it sprang into existence in Pasadena in 1927 as an outgrowth of the aeronautical interest of certain individuals with faculty connections in the Guggenheim School of Aeronautics at the California Institute of Technology, the University of California, the University of Southern California and Occidental College.

Dr. Robert A. Millikan of the California Institute of Technology at Pasadena, at that period and subsequently pointed out that in and around Southern California were all of the necessary elements for an alliance of aeronautical leaders federated to join scientific research to commercial production and practice.

The Aeronautical Publication Award is designed to inaugurate a plan by which from year to year books of more than average accuracy, scientific value and instructive interest may receive merited recognition in order to permeate the Industry, the Institutions of Aeronautical Science and the Public with a philosophy of common action for a common end,—the supremacy of America in aeronautical achievement and the coordination of these achievements with the best achievements of other nations.

“Air Conquest” has been selected as the most timely and outstanding contribution to Aeronautical Literature. With a background of idealistic purpose—the opening up of a new international horizon through the breaking down of national barriers—it has an imaginative appeal calculated to open the eyes of the reader to a new field of commerce and industry.

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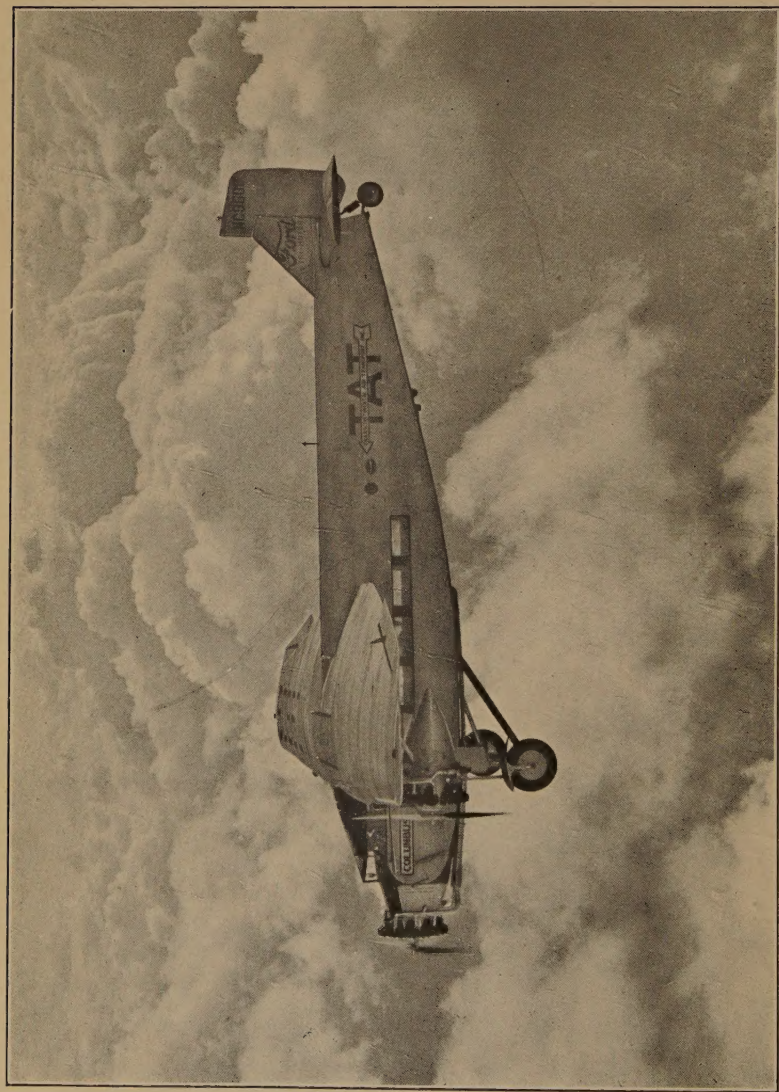
PUTTING LAWS OVER WINGS -- 1926

THE WORLD'S WINGS -- 1927

JAPAN, THE ACE OF THE PACIFIC -- 1928

RADIO LAW -- 1929

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AIR CONQUEST

BY

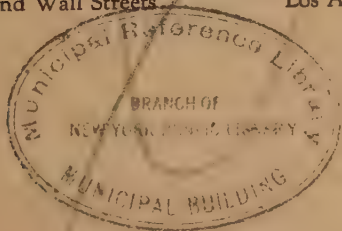
W. JEFFERSON DAVIS

AUTHOR OF "THE WORLD'S WINGS,"
"RADIO LAW," AERONAUTICAL LAW," ETC.

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Fourth and Wall Streets

Los Angeles, California



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CURTIS PUBLISHING COMPANY
NORTH AMERICAN NEWSPAPER ALLIANCE
NEW YORK AMERICAN
W. JEFFERSON DAVIS

FOREWORD: FROM AN ARTICLE, "AIR TRANSPORT," BY
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DEDICATION

TO MY WIFE

Remembering our first days in the air together and in pleasant anticipation of others to come, this record of air journeys over American airways and through Europe is affectionately dedicated.

THE HEROES

by

JAMES D. PHELAN,

United States Senator from California, 1915-21.

*"I looked and the sky was flaming;
I turned and the light was dead."*

Triumphant world! Man glorious endowed,
The conquest of the universe his goal,
Strove not his sons to rise above the crowd,
Defeated were the mission of the Soul.
I see heroic men with glory crowned,
And youths, ennobled, stretched upon the sward;
Their decoration is a gaping wound,
But conscious manly effort their reward.
That Icarus, once, when lost in skyward flight,
Despairing hope still held mankind in thrall,
Shall, shirking now, the elements affright,
Nor heroes, science-winged, contend for all?
Humanity shall yield its precious breath;
We grow by sacrifice; we live by death.

SONNET TO LINDBERGH

by

WENDELL PHILLIPS STAFFORD

(Supreme Court Justice, District of Columbia)

Lone eagle of the wild Atlantic plain,
Tall, laughing boy with sun-glints in your eyes;
Playfellow of the lightning and the rain,
Co-sentry with old watchers in the skies.

Light-hearted prologue to the epic muse,
Glad reuniter of long-riven parts;
Bright Hermes of the nations, bringing news
Of love still flaming in all human hearts!

“Do I deserve all this?” Oh, more, far more,
More than the grateful world can ever pay.
A fouler fog than hides Newfoundland’s shore
Your little bark’s propeller whirled away.

Fly on, above the mist of sordid things;
Rise, like the sun, with healing in your wings!

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FOREWORD

by

CHARLES A. LINDBERGH

The majority of people hardly realize that they can travel from place to place by air.

There was very little passenger flying on regular schedule in the United States prior to 1927, yet in 1929 every important city had its air-line connections and you could purchase air-rail tickets for points in Canada, Mexico, Central and South America and the West Indies. I think there is little doubt that within the next few years there will be scheduled flying across both the Atlantic and Pacific, connecting the continental lines of the Eastern and Western hemispheres. In fact, I do not believe it is too visionary to predict that the time is coming when, except for short distances, all first-class passengers will travel by air.

CHAPTER I.

THE NEW ERA IN FLYING

As the air epoch dawns, the giants of the great American railway systems are deploying their forces and moving up their heavy artillery for a battle which eventually will map the great integrated systems of air and rail lines of America. The encounter began with elementary competition among railroads for air line connections, breaking passenger hauls with short flights. It is rapidly moving into the stage of a race among the railroads, not merely for the "show window" connection with air lines, but for permanent and advantageous joining of routes on a basis of sound economic advance.

As the new air-rail systems are being hammered out on the anvil of competition, it is not only evident but indisputable that the present situation marks the commercial and technical triumph of aviation. It is not as mere showy auxiliary of transportation that aviation is now receiving the overtures of the railroads. It is rather as a great, arrived new system of swift, safe and comfortable transportation, four times as fast as rail travel, and stabilized by the genius and resources of American finance. Aviation has now attained full diplomatic standing in the court of American business enterprise, and it is this assured

position which has started the railroads competing for its favors.

The New York Central hook-up with Aviation Corporation and Western Air Express, in the development of a trans-continental route, is a move toward a fusing of land and air transportation under the drive of competition. By this system a passenger from New York may go by train to Cleveland and thence take one of two routes. He may take the Universal Air Lines from Cleveland to Kansas City and then west over the Western Air Express, or he may take the more northern route, via the Universal Air Lines to Chicago and from there to the Coast over the Boeing system.

In still another great system the New York Central joins with the United Aircraft and Transportation Corporation, by which the lines of the Boeing Corporation, a subsidiary of the United, are used from San Francisco to Chicago, and the Stout Air Lines between Chicago and Detroit, with passage from Detroit to New York over the New York Central. Thus, with the entry of United into this field, the New York Central attains two northern lines.

The cooperation existing between railroads and air transport systems may be illustrated by citing that Western Air Express has traffic agreements with thirty American and Canadian railroads.

The Pennsylvania and Santa Fe systems shoved in early with a tie-up with Transcontinental Air Transport, the corporation with which Colonel Charles A. Lindbergh is associated as technical advisor. This line from New York to Los Angeles and San Francisco is via Columbus, Ohio, St. Louis and Kansas City, Waynoka, Okla., and Clovis, New Mexico, constituting a southern route. President W. W. Atterbury of the Pennsylvania was one of the first railroad executives to foresee the inevitable junction of air and rail lines.

The Haliburton line—Southwest Air Fast Express, owned by the Pennsylvania Railroad and operating between St. Louis, Kansas City, Dallas and soon to Los Angeles, at first quietly picked up an operating agreement with the Texas and Pacific train service. It connects handily with Transcontinental into New York. In the West, the Southern Pacific and Union Pacific companies are cooperating with the Boeing Line. The Pennsylvania Railroad system took over the operation of National Air Transport as a step in the acquisition of air lines, with which to supplement its rail service.

Detroit Aviation, in addition to its Nevada Air Line service between Los Angeles and Reno, is also operating a fleet of fast Lockheed airplanes especially built for transit of stocks and bonds between the Pacific Coast and New York.

National Air Transport is also feeling out the possibilities of carrying passengers beyond its Chicago-Minneapolis run, and in combination with one of the Northwestern railroads, reaching out to Seattle, Portland and Vancouver. The system extends from Chicago to Dallas, and from New York to Chicago, and possible new connections not only would yield a new transcontinental route, but a sectional contact from the Lakes to the Gulf.

Columbus and Cleveland, Ohio, inevitably will become great aviation "roundhouses," from which planes will depart to the West and South. Columbus is now the natural jumping-off place for planes taking the southern routes, and Cleveland for planes of the more northerly routes through Chicago. On account of the fog overhanging the Alleghanies, it has not been expedient to include this opening stretch from New York into Ohio in the air schedule. This first leg of the journey is now taken by pullman at night, with air connections from then on. This inclusion of a flight in the New York to Chicago trip cuts four hours from the fastest schedule and reduces traveling time to sixteen hours. The transcontinental trip has now been cut down to two days and two nights. The mail trip, with the inauguration of the Boeing Transcontinental Night Air Mail service in 1929, has been cut to a day and two nights. Commercial passenger trips must of necessity and are

being adjusted to the maximum of speed and duration of flight attainable with comfort.

Notable in the air transport field there are also the Pan-American Airways, Inc., reaching down to Miami, and the Aviation Corporation, which recently absorbed the Colonial Airways, operating between New York and Boston, and Southern Air Transport. Aviation Corporation also has formed the Embry Riddle Aviation Corporation, to take control of the Embry Riddle Company of Cincinnati. The latter operates passenger and air mail lines between Cincinnati and Chicago, by way of Indianapolis. The Embry Riddle lines connect with the airways of the Universal Aviation Corporation at Chicago, and at Cincinnati they connect with Continental Airways, a subsidiary of Embry Riddle. In this manner, it acquires a double connection at Cleveland with the Colonial Airways system, Colonial Western from Cleveland to Albany, Canadian Colonial between New York and Montreal, touching at Albany, and the Colonial Air Transport between Boston and New York. The Aviation Corporation also owns and operates Southern Air Transport, a system of air lines through the South.

Thus, the rapidly combining network of cooperating air and rail lines already has virtually enmeshed the country. The opening success of alternating rail and air travel passage over long distances, attaining

increased speed and comfort, has stimulated the railroads to a realization of the urgent necessity for a quick and effective amalgamation of land systems with the great air routes. There has been talk, at conferences of railroad and aviation interests, of some kind of combined economic and technical survey, of national air lines, by which the blundering and waste of early-day railroad competition could be avoided, and a scientific articulation of rail and air transport achieved. This might have been possible had it not been for the wide diversity of interests, the complexity of both railroad and aviation finance, and the rush of finance which threw the entire enterprise, in its early stages, back into something like a big dog fight. The "dog fight" era will pass, of course, and in its passing there will no doubt be considerable waste and inefficiency, but great figures like Huntington, Hill, Underwood, Harriman, Plant and Gould of early-day railroading will arise in this transition era, and strong hands will guide the integration of great air and land systems to their final goal of supreme national utility.

C. M. Keys, president of the Curtiss-Wright companies and organizer of the Transcontinental Air Transport, is typical of the long-range vision and prophetic insight which will come to hand in this great enterprise. It was his realization of the inevitable juncture of railroad and aviation interests which

led President Atterbury of the Pennsylvania into this field. Mr. Atterbury typifies enlightened railroad leadership which sees the meaning and trend of these events.

The Clayton Act and the Interstate Commerce Commission prevent certain closer amalgamations which otherwise might occur, but the railroads will find little difficulty in adapting their financial structures to all the practical requirements of joint operation. Following the method of many expanding utilities, like the new Utility Corporation of the Morgan interests, they are acquiring minority stock holdings in aviation companies. The securities are held by specially organized subsidiary companies, such as the Pennroad corporation, which holds the newly acquired aviation stock of the Pennsylvania railroad. In this manner, obstacles which might otherwise be the barrier against interlocking directorates, are avoided.

To a superficial view, in view of the fact that an air line requires no tracks or rights of way and need exercise no rights of eminent domain, it would appear that the railroads might have developed their own air lines, merely buying a few planes and putting them in operation. The question has arisen as to what the air lines have had to bargain with when competing railroads have approached them for working agreements.

The answer is readily at hand for one who gives

even a few moments' thought to the development of aviation in America during the last few years. It is an impressive story, and not only of technical achievement, but of daring and intelligent financing, in which investment bankers must be given their due share of credit. As a result, the great air lines are genuinely systems, embodying not only the utilization of an epochal new invention, but trained personnel, proven economic capacities and managerial technique and experience derived from meeting the practical problems of aviation as they arose in this laboratory stage of the industry. For this reason, the air lines have a trading capital by no means limited to their financial resources.

The United States government pioneered transcontinental aviation in subsidizing the mail-carrying lines in 1920. Subsidies are not in accord with American governmental precedent, but in this case it was a far-sighted move, and it gave the industry the basis of operating experience on which the air lines are now working. It has been within the last two years that Western Air Express demonstrated that it is possible to carry passengers and goods at a profit, without a subsidy, and to pay dividends. Back of this achievement was the splendid cooperation of the Daniel Guggenheim Fund for the Promotion of Aeronautics, which has given the western operators the benefit of an aviation laboratory.

Aviation is the latest of our Billion Dollar Industries, with its securities listed and holding their financial position. Not only great financial resources, but a vast amount of technical work, research and experimentation and years of everyday business experiment have gone into the making of this great industry, both in flying and manufacturing. It is the simple fact that this work has been done, that practical aviation is here on the job, with a vast amount of brains, money and experience behind it, that has made the railroads adapt themselves to this system rather than try to build their own. In the early days of aviation, it used to be said by flying men that bankers always rang the burglar alarm when any aviation promoter entered their banks. In these days, not only the banker but the railroad magnate dusts off the best chair and bows low when this same visitor enters.

Behind this is the simple fact that speed in transportation is a valuable, negotiable commodity, and the railroads are ready to bid for it. The present flying time of a day and two nights between New York and Los Angeles, or San Francisco, could be cut considerably today, and it will be cut a great deal in the near future, commensurate with progress in safety and comfort. Passenger revenues constitute only a portion of the returns. The airplane already is saving the country many millions of dollars a year

in lessening time out for checks and other commercial paper, moving between great cities. A tremendous volume of securities is now shipped by air. This new method of swift communication has played an important part in gearing up the financial machine of the country to the 6,000,000 and 12,000,000 share days on the stock exchange. Thus, in the great modern instrumentality of credit, the airplane has become an invaluable accessory.

Air companies charge ordinarily from \$100 to \$150 an hour to operate a large passenger plane. Overhead will decrease, and rates will fall as the public takes to the air in increasing numbers. Technical advance already recorded and immediately practicable has narrowed down to the essential problem of "pay load," and there is already a sufficient leeway here to assure greater profits and lower rates, with increased utilization of aircraft. It may safely be said that the technicians have won through, and that their major problems have been solved.

Having attained speed and lifting power, the technicians are now concentrating on safety and comfort. While it is true that there were some disquieting accidents during 1929, these records shrink against the background of rapidly increasing mileage. The Guggenheim Foundation has done splendid work in its safety research, and, through sectional weather services, keeping pilots continuously and accurately

informed as to weather conditions ahead, hazards of fog and wind are being constantly lessened. The machines themselves are rapidly nearing the fool-proof stage, and the remaining factor of uncertainty is being narrowed down to personnel. This is, in a measure, self-corrective, as the last two decades have brought forth a race of young Americans who now find the air their natural element. Curtiss Flying Schools are springing up everywhere in the country, and the Army Air Service is doing splendid work in training aviators. There is no ground for misgivings on this score.

Noise is one of the remaining comfort problems to be solved. The last year has marked a great advance with the insulation of the passenger cabin by Balsa wood shavings. American technicians are studying the invention of Bjoerne Carlen, the Norwegian inventor, who has silenced airplane engines by a mechanical device. The apparatus, attached to the wings, draws off the exhaust gases and creates a vacuum in which the noise is deadened. Onlookers in Berlin were alarmed when they saw a plane overhead with the Carlen silencer. Remaining aloft for a considerable period, the motor was absolutely silent and it was thought that it had died. Leading technicians assure us that the era of noiseless flying is at hand.

Luxurious air pullmans already are here. Night

flying, at ease in an air pullman berth, is pleasant and sleep is sound. Carrying a kitchen, a lavatory and luxurious lounging and reading quarters, there is little which the planes may add in the way of comfort. Two-way radio communications are now being provided. With the noise deadened, and this will be done, there will be virtually nothing else to be done.

In talking with leading aircraft designers and engineers, we are assured that in the very near future it will be possible to make the flight from New York to the Pacific Coast in 14 hours, at a speed of 180 miles an hour, in planes carrying 30 persons or more. This is not conjecture or mere prophecy but a carefully computed finding from scientific data.

The train and airplane fare from Chicago to New York, including transportation to the aviation field, transfer to the train at Cleveland and railroad and pullman fare to New York, is now \$67, as against the regular train fare of \$51.50. This is shaving the additional flying expense pretty low, and this figure inevitably will be lessened as more passengers take the air route. It is not surprising, then, that the railroads are shoving in rapidly to avail themselves of the time-annihilating airplane.

Railroads and air lines together are intent on federal and state legal interpretations which will facilitate rather than retard the progressive amalgamation of land and air facilities into a great national system.

The Committee on Aeronautical Law of the American Bar Association has been at work on this problem for many years and there is still a vast amount of adjudication necessary before the ways are cleared.

In California, due to a peculiar constitutional provision, the question arose as to whether or not air lines would fall under the supervision of the State Railroad Commission. The state has a residuary sovereignty in the air, the primary sovereignty residing in the nation, and there is a grave question as to whether an air line should be required to apply for a state certificate of public convenience and necessity. There is also a serious question as to the constitutionality of requiring a federal license in intrastate flight. States will undoubtedly claim jurisdiction over licensing and inspection of planes operating solely within their own boundaries. The Governor of California recently took this view and vetoed as unconstitutional a state law requiring a federal license solely. The creation of an Interstate Air Commerce Commission is on the immediate horizon.

In view of the growing entente between rail and air lines—the railroads competing against each other and not against aircraft—it is interesting to note that the German Luft Hansa, under the leadership of Otto Merkel, courageously pioneering commercial aviation, found a natural and immediate economic alliance with the great steamship companies. Europe is a network

of Luft Hansa lines, closely integrated with shipping lines, and the Hamburg-American office in New York is the agent for combined rail, ship and air tours over Europe. Following the same line of natural development, New York railroad lines are the selling agents for summer land and air tours through America, including the recently announced scenic flights over the great national parks. In the working out of the basic economics of the flight era, it has appeared that aviation has clicked easily into the systems of land and sea facilities—not as a mere supplementary resource, but as an instrumentality vastly augmenting and enhancing man's greatest previous achievements in transportation.

Aviation, arrived and indispensable, has compelled the railroads to compete in making use of it, through cooperation with the air lines, but not in competition with them.

CHAPTER II.

"ZEPPIING ALONG"

The quality of the public's expectations toward the expansion and development of aviation—as, indeed, toward every new thing in these latter days of miracles—has vastly improved within the last three years. People believe now that anything can or may happen in the expansion of aviation's activities and possibilities, and the thrilling thing about it all is that anything can, may and will happen!

The Graf Zeppelin has completed an ambitious trip around the world. What visions—visions due to come true—these sea-hopping flights, by both plane and lighter-than-air craft, are summoned up on a moment's thought. We've commented and talked and speculated on a world close-knit by aviation; that world is here. The future we were looking for only a few years ago is arriving.

The Atlantic has been spanned. The Pacific—?

The Orient lies on the other side, teeming, reaching toward us—and aviation will bring us together. A whole new world commerce waits to move on wings and under the gray bodies of giant dirigibles.

The drift of mankind, since the storied days of the Garden of Eden, has ever been westward. And at the barrier of the shores of the Pacific, the drift

stopped. The next leap? The girdling of the globe will be completed; the waves of civilization will begin doubling back on themselves. And in the piling up that will result—the doubling of old ideas back on new, and of new on old—the commercial and social direction of the whole world will be changed.

Power! No such urge of ability and confidence and vision has ever before struck the world. The outlook, based on present achievements, brings a great spiritual satisfaction to a world newly-awake to its own strength and beauty. And there will be material gains, too.

Trans-Atlantic air lines will do one thing for commerce and industry. But Trans-Pacific air lines will weld the whole world into a final economic entity. What prescience—what intuition—has caused industrial leaders in this country to sense, rather restlessly, this new thing in the air? What basis for prediction can even the most conservative mind find in contemplating the fact that within the last three years more than \$500,000,000 worth of new factories and branches have been established in Pacific Coast cities—from Seattle to Los Angeles?

One might almost ascribe these prior manifestations of acumen as being something born of mankind's finer sensitiveness; there is something smacking of a directional destiny in the whole picture. Per-

haps the advances of civilization spring from some inner urge of the composite human mind.

From these intangible considerations let us descend to more definite and practical considerations of what the inevitable spanning of the Pacific by air lines is going to mean to the world and to our own nation.

The first stimulating factor to be considered comes to the top in our very first bit of research on the subject; that is, that the United States is Japan's best customer. And trade with Japan is a good index of a nation's commercial relations with the Orient. This nation takes between 40 and 45 per cent of all Japan's exports, and supplies to her between 25 and 30 per cent of her imports.

Through the customs houses at Seattle, Portland, San Francisco, Los Angeles and Hawaii more than a billion dollars' worth of goods ebb and flow every year, a greater proportion from the Orient.

Looking at the situation the other way around—from the Orient—we find that Japan, among all the nations of the world, is our fourth best customer, taking 6 per cent of all the goods and materials manufactured and produced in this country for foreign trade. Nearly 10 per cent of all the goods we buy in the marts of the world comes from Japan. China is fourteenth in rank among our foreign customers; and is ninth among those from which we buy.

So there is, right now, an enormous flow of busi-

ness—a great stream—into which trans-Pacific air transportation may dive.

Perhaps the freight possibilities are not so apparent. Raw silk is our favorite article from the Orient, and air transportation, while offering some advantages, might not be able to subsist on a revenue diet of raw silk—and silk products—alone. But, remember, other things besides the commodities themselves enter into business.

There are the things that stand for business—drafts, checks, securities, correspondence. How enormously an air mail service—on the Pacific or anywhere else—can speed up the lubricants of business. Distance is now one barrier between America and the Orient, and it is a barrier that effectually controls the speed, the tempo, of trans-Pacific commerce. The airship, or the 100-passenger airplane, can reduce this obviating and hampering factor by more than two-thirds.

Getting down among the goods on the piers and in the warehouses to get a better picture of our trade with Oriental countries, we find among our imports: raw silk and silk products, rice and paddy, waste silk and floss silk, plaits for hat-making, cotton tissues, grass rugs, hats, caps, bonnets, buttons, menthol crystal, camphor, potteries, crepe papers, glass and glass products, lamps and parts thereof, toys, tea; and, exports: wheat, raw cotton, cotton tissues, crude sul-

phate of ammonium, wood, leather, caustic soda and potash, coal tar dyes, zinc, petroleum, benzine, oil, illuminating oils—to name the major items.

But, we are here considering commodities in bulk shipments—huge shipments. We can see that many of these commodities are of a nature not likely to require speed in delivery,—except in special or exceptional and specific cases. These cases when speed is required will welcome fast delivery. Little shipments in a hurry. The Trans-Pacific Air Express!

And with the opportunity for fast, efficient delivery these special shipments-in-a-hurry cases will increase. When we are deep in the woods, we do not spend our money; but when there's a store handy—we begin to think of things we need. Our stores will not be far from the Orient, nor theirs from us. Mail order business international!

But it will be the mail contract possibilities that will offer the first inducement to those who venture their capital behind a trans-Pacific air service. Five thousand pounds of first-class mail goes to Hawaii every week from the mainland—enough to justify service that far into the Pacific to start with, even if only weekly service were given. One dirigible or one airplane could easily carry this much mail—and have room left for passengers and express. And at \$3 a pound—less than the cost when transcontinental air mail service was established—the mail alone would

pay many times over the cost of operating a dirigible of, say, half the size of the Graf Zeppelin from the mainland to Honolulu. (We have been permitted access to actual estimates on such a service.)

Air mail fills a special place in business intercourse; until it came into being there was a huge gap between the almost instantaneous telegraph and the slower regular mails, even when the latter were slightly speeded up by special delivery service at the destination. Air mail is slower than the one, and faster than the other—a rather “happy medium” under many circumstances. This aspect alone makes trans-Pacific air service appealing; there is need for communication at just such a tempo.

See how the air mail makes a field for itself: In the first quarter of 1928 the air mail carried 471,000 pounds of mail; in the first quarter of 1929, the poundage was 1,689,500. For the second quarter of these respective years, the figures are 581,400 and 1,689,500. Growing all the time. And the regular mails have not suffered any appreciable loss.

In an international air mail service the same principle of growth and development would undoubtedly apply.

So the field for trans-Pacific air service exists.

Is such a service possible? Soon?

The best indication that it is possible is seen in the announcement of Paul W. Litchfield, president of the

Goodyear-Zeppelin Company, that within two years a fast mail service across the Pacific will be established. Negotiations have been initiated with the government for a mail-carrying contract for the first lap—to Hawaii. These negotiations, Mr. Litchfield has been told by the Postmaster General, wait only on the successful inauguration of the dirigible line.

The hop to Honolulu offers no points of hesitancy to the projectors of the proposed dirigible line. This line would be only 2400 miles long—a mere stretch compared to the London-Bombay-Sydney line which will be in operation this year, and that other ambitious English dirigible line undertaking, the London to Capetown, Africa, government line. As this is being written, two English dirigibles, the R-100 and R-101, are being carefully tested by the British Air Ministry before being put into service on these Colonial lines. The Los Angeles-Honolulu line seems small by comparison. And, plainly possible.

And—from Hawaii? Easily to Japan, China and Australia.

And—connecting at Sydney with the British lines, what do we get? An air service extending from Los Angeles, via Honolulu, to Tokyo, Bombay, Sydney—and up to London! Three-quarters of the way around the world.

And at London, connecting with the trans-Atlantic

service, completing a dirigible service around the globe.

The extensions into the reaches of the Pacific will of course be gradual. Perhaps the first services will be a combination steamer-dirigible (or -airplane) service, comparable to the present new transcontinental train-plane services. Giant dirigibles will go out to meet steamers, descend to the decks, rise up with passengers and perishable commodities and buzz back to the mainlands, beating the steamers in by many hours.

Experiments have already been made with dirigibles, in this manner. In every case the experiments were successful. On January 27, 1928, newspaper readers will recall, the dirigible Los Angeles landed on the U. S. S. *Saratoga* at sea south of Newport. And a few weeks later, on May 10, 1928, the TC-5-251 landed on the deck of a moving steamer, the *American Trader*, three miles off Ambrose Light, N. Y., loaded on a cargo and took off again.

The possibilities suggested by such a combination-service are stimulating to the imagination. Steamship companies are taking careful note of them. The railroads waited on the demonstration of the absolute dependability of the plane, before they joined up for combination service; but the steamship lines will not have to wait on a dirigible demonstration: they need only proceed.

Exact figures on the per mile cost of dirigible operation, by which we might arrive at some ratio between operation costs and possible ton mile revenues, are not easy to get just at present; first, because there is such a vast difference in dirigibles at the present stage of their development; and secondly, because the companies making such studies are "playing the cards pretty close to their vests," as poker players say: they aren't giving out very much information. In this caution, it is easy to see that the maneuvering for the conquest of the oceans by air has already begun.

But we may take some arbitrary figures which have just recently come to world attention, figures based on the trip of the Graf Zeppelin. The flight was expected to return to the German people \$500,000 in revenues—half the cost of construction. Passengers paid \$162,000 of this, and the remainder came from freight and mail.

Fortunately, the Graf Zeppelin's experience gives us a basis for figuring what the cost may some day be for air mail service between this country and the Orient. The rate charged for the round-the-world trip was \$3.55 for carrying a letter from New York eastward around the globe and back to Los Angeles. For letters from New York to Japan, the charge was \$2.05. These, of course, are arbitrary figures—as all charges are on such preliminary and initial trips.

When air mail service is actually established, we can expect the charges to be much lower; the transcontinental air mail service has indicated that this will happen—and, indeed, in any undertaking, with the constant pressure toward efficiency and reduction of operating costs, the experience has invariably been that costs to users have been reduced. Air mail service across the continent, for instance, cost the public 24 cents an ounce when inaugurated; today the charge is only 5 cents for the first ounce and 10 cents for each ounce thereafter, and further reductions are in prospect.

Passengers paid \$9,000 each for the globe jaunt. At the same rate, the cost of a trip from Los Angeles to Tokyo by dirigible would be about \$2,250. But passenger charges, too, will be much lower when a line is once established.

“They will approximate steamer fares,” a cost accountant, at work on such data, assures us. “And, just to be very conservative, we will say that this leveling of fares to steamer charges will take place within three years after a dirigible line is in operation between Los Angeles and the Orient, via Honolulu. Dr. Eckener, commander of the Graf Zeppelin, has announced that trans-Atlantic dirigible service will be established on a definite schedule within twenty-four months. The trans-Pacific service will follow as rapidly as the idea takes hold on the consciousness

of the countries involved. With the example of the trans-Atlantic service before them, how long will this be? Our company, which is not announcing very much just now, believes it will be within the next year after trans-Atlantic service is definitely under way."

American inventors and designers working on ideas for a standard dirigible favor at present an airship about half the length of the Graf Zeppelin. Airships of this class will be 400 feet long with an amidships diameter of 90 feet. These are airships of a new type. They will have greater range and better navigational facilities than the larger ships of today; will be shorter in length, with a greater proportional lifting power, and increased factors of safety. A feature will be an automatic pilot, operated similarly to the radio-directional finding compass which keeps the airplane pilot on his course through fog and storm.

Still another device now being perfected is a television instrument which will permit the dirigible pilot approaching a landing field to see through fog and steer a straight course to the mooring mast.

And even the mooring masts will be improved. Under one plan they will be done away with entirely, particularly in the case of smaller airships. A revolving cradle will be used instead. The cradle is just what its name implies—a large out-of-door resting place for the dirigible. Storms may come and storms may go, but the dirigible, settling peacefully into its

cradle nest, will be undisturbed. This device will remove the final fear of the passenger who dreads ascension by elevator to the nose of the ship; passengers will enter from the ground.

Because of the new phase of "air-mindedness" the Graf Zeppelin's flight has brought in its wake, I have dwelt at some length on the use of dirigibles in trans-Pacific air service; but there is still another reel or two to the picture. Gentlemen, the airplane! Certainly if the dirigible gets over the Pacific ocean it will be because it has beaten the 100-passenger plane to the business. The ancient (as the young air industry goes) rivalry between the two types of craft keeps up—and the new trans-ocean commerce prospect finds them neck and neck down the home stretch.

Trans-ocean planes are being developed rapidly from the Rohrbach 50-passenger plane to the Dornier 100-passenger flying schooner. And German vision is already on its way to the 10,000 horsepower trans-ocean flying boat capable of carrying a passenger list of 135, a crew of 35 and a freight, mail and express payload of 13,000 pounds. This, you see, compares with the carrying capacities of the dirigible.

Dr. Ing Grulich, technical director of the German Luft Hansa, lecturing at the International Aircraft Exhibition at Berlin in 1928 pointed out that planes for trans-ocean service will undoubtedly be giants. To bear out his prediction he described some of the

enormous planes now being constructed by Dornier, Junkers, Rohrbach and Rumpler. His address, because of its far-vision, created a sensation; but since then, three of the Rohrbach 50-passenger planes have been officially accepted by the Deutsche Luft-Hansa for trans-Atlantic flying. The line on which these planes will operate will be inaugurated possibly by the time this appears. Originally intended for use from Hamburg to Rio de Janeiro, these planes may also be used on a Hamburg-New York line, according to an announcement by Herr Otto Merkel, director of the company.

Last summer at Altenrhein, Switzerland, a 12-engined 6300-horsepower Dornier flying boat weighing 25 tons and capable of carrying 100 passengers passed its air tests. Its field of operation will also be the Atlantic.

Rumpler's 135-passenger air yacht, with ten 1,000-horsepower motors and a speed of 185 miles per hour, will follow over the waves in the wake of the liner *Europa* which has just broken all Atlantic steamship records.

To come back to the Pacific, the trail has already been blazed for plane service, blazed in as significant a flight as ever went down in the records, that of the Southern Cross from Oakland, California, to Brisbane, Australia. This plane, bearing four men, flew 7400 miles, carried 15,807 pounds and averaged 90

miles an hour. The flight of Colonel Lindbergh across the Atlantic, being an individual adventure appealing to the imagination and stirring one's admiration, rather caused us to lose sight of the great significance of the Southern Cross adventure. Lindbergh's flight made the United States and Europe mutually "air conscious"—aware of the commercial possibilities of trans-Atlantic flight, and receptive to its inauguration. The flight of the Southern Cross did the same thing for the Orient and Australia—turned the eyes of the East toward us with confident expectancy.

Aside from this important psychological product of the flight, it demonstrated the feasibility of trans-Pacific air navigation, even under comparatively "unmodern" conditions. The Southern Cross hopped off into a void. The navigators and pilots had only a few of the surprisingly perfect navigational aids that have been developed since their flight.

A plane starting today on such a trip would be safeguarded with an artificial horizon-sextant, sun-compass and drift-indicator. With these instruments the navigator of a plane traveling 100 miles an hour and out of sight of land can determine his position on this huge globe within a small fraction of a mile!

The end of perfection in this direction is not yet. Almost every week some improvement is made on present equipment and methods for plane protection,

or some new device comes out of the shops. No industry has ever so quickly developed its accessories in the period of its very beginning as has aviation.

A fact overshadowing the inauguration of trans-Pacific air service and stimulating all the latent possibilities with new vigor is the announcement by the Navy Board, headed by Admiral Moffett, that the naval dirigible base will be moved from Lakehurst to some point in California. Numerous sites are being considered in the metropolitan area of Los Angeles, which extends from the mountains to the east of the city to its harbor 20 miles westward. This important change in the navy's dirigible operations has a significant bearing on the prospect of trans-Pacific service, because experience has shown that commercial aviation invariably follows the army and navy's exploitation of the air lanes. This was true in the establishment of the air mail service. And "commerce follows the flag."

California's claims to such recognition are well known. She has the climate; she has the population in the metropolitan area; her industries are growing; her hinterland, reaching eastward to the Colorado river, with the development of Boulder Dam, will be an empire in itself—and, with the new train-plane service, she is only one day and two nights from New York.

Commercial operating companies have already

placed under option or purchased numerous tracts of land for dirigible plants; and there are already more than one hundred airports within the city limits of Los Angeles, of which fifty are potentially Class A ports. One company has assembled the first of a fleet of dirigibles—and as this is written this little blimp floats lazily over the business district of the city, an inspiration to office workers who must dig into records and data to report the progress of the industry which gave it its life. The little blimp is a civic shouting spot; if you are a stranger in the city, your Los Angeles friends will not let you miss it; it is a herald, a talisman, a symbol of what Los Angeles hopes to be—and will be. Eventually, *e pluribus unum*.

The Angeleno-ian dream is one of broad and bold and amazing colors. Huge dirigibles or airplanes coming in from and leaving for the Orient; smaller craft of the same kind radiating from central local termini to all corners of the nation; a great metropolis at the cross-roads of international air commerce. Columbus discovered America, but Los Angeles has discovered her destiny—say the exultant.

On the other side of the ocean, likewise, factors are shaping up receptively for trans-national air communication. Japan has now more than thirty factories turning out flying machines, parts and accessories. A five-year plan calls for construction of a series of

airdromes along the Korean frontier. One will be at New Wiju, another at Kokai on the northern Korean border; and along the 300-mile sea frontage there will be five aviation fields at intervals of 50 miles. Naval air stations are located throughout the Japanese Empire and in Formosa and Korea. The senior naval service station is Oppama Field at Yokosuka; other important stations are at Kasumigaura, Kure, Omura near Sasebo, and Maizuru, and there is a substation at Moinato near Aomori. The Tokorozawa station is the most important training station in the empire.

Here we can see the foundation for development of aviation in any direction. Commercial aviation in Japan started with a 450-mile mail route between Tokyo and Osaka, and between Tokyo and Fukoka. This line has now been extended to Shanghai and Korea. Other planes are on duty between Tokyo and Peiping (Peking). Scouting planes have been sent to Paris and London preparing the way for a mail route across Siberia.

Japan does not need to be urged, therefore, on the proposition of trans-Pacific communication; she is not only in a receptive mood but has gone so far as to make appropriations for a north Pacific crossing to the United States by way of Alaska.

Japan is awake to the possibilities for extending her already great merchant marine service on the

Pacific by means of combinations with aviation auxiliary service.

What will be the effect on our foreign trade, with the Orient, of air line communication?

In the first place, gigantic new fields will be opened up for American salesmen. And for Oriental representatives in this country. One reason some sections of the Orient have been backward in accepting machinery from this country has been the distance to the factories to be taken into consideration when parts are needed. A \$10,000 machine might be out of commission for weeks, or even months, while some small part was en route for replacement of a broken one. With air service, the factories of the United States will be but a few days from the most isolated places.

But there will be larger considerations. When nations can exchange goods amicably, causes for dissension are removed. Cramped as she is, and needful of our resources as she is, what reason would Japan have for thinking aggressive thoughts against us and our security if, through peaceful trade, she can have access to our resources, and we to hers? Before the expiration of the Washington Arms Conference agreement in 1931, air traffic, even if in only a preliminary stage, will have broken down the barriers of suspicion and the subcurrent of unrest which made necessary the resort to agreements on armaments.

The utilitarian purposes of the airplane and airship have put to useful employment the unleashed energy which would otherwise have been diverted to warlike preparations.

And what could be a better prospect?

CHAPTER III.

THE HUB OF THE AIRLANES

The first air trip in California was made out of San Francisco in 1869 with a gas-filled balloon. It was fifty years later before air transportation began to merit consideration, but in a decade California has become a great hub of air travel, with an over-ocean service for Hawaii taking definite form. The entire Pacific slope between San Salvador and Vancouver is well served with airlines, transcontinental air service with luxurious equipment is available with both San Francisco and Los Angeles as terminals, and it is possible to reach Kansas City, Chicago or St. Louis with the loss of but one business day.

The essentials which make California a great hub of air transportation are so marked that such leaders as R. E. Fisher, chairman of the California State-wide Aeronautical Committee, and James A. Talbot, chairman of the board of directors of Fokker Aircraft Corporation, do not hesitate to say that the state's position of leadership in American aviation is secure. In number of pilots, number of airports, and other phases California has attained and promises to retain leadership.

The first years following the world war naturally called for development and initiating aerial progress,

and this was true in California. An airline between San Francisco and Los Angeles via Fresno and Bakersfield was established in 1921, but as the company had only one plane the period of operations was limited. Then came the great pioneer, the transcontinental air mail line between New York and San Francisco, established and operated by the Postoffice Department. The aviation critics said generally that it was impossible. It was impossible, too, but the Postoffice Department had Congressional orders to fly it and it was flown. The mail went through.

This had a great stimulating effect on commercial aviation in America. It encouraged the airplane manufacturers, who realized that fighting aircraft production would not suffice for a permanent business. It inspired capital to consider the plans of air transportation men. If loaded airplanes could fly with high efficiency over the Appalachian, the Rocky and the Sierra ranges it was considered feasible to fly everywhere. Western Air Express came into the field in 1926 with an air mail line between Los Angeles and Salt Lake City, connecting with the transcontinental route. The demand for passenger space forced, in a month or two, its enlargement to a combined mail and passenger route. The airplanes on this route have been flown more than two million miles and have an efficiency record of more than ninety-nine per cent.

The year 1926 marked the beginning of genuine

commercial establishment and rapid development, so rapid and expanding that statistics furnished today become outdone at once. As Mr. R. E. Fisher said in a review of California aviation, "Unquestionably, 1929 was one of the banner years in aeronautical development, but as a matter of fact, since 1926 what year has not been a banner year in aviation? Each year sees progress more rapid and development more astonishing."

The postal air mail route between Chicago and San Francisco was taken over by the Boeing System, which now flies luxurious passenger-carrying airplanes that travel night and day to expedite mail and other business. Western Air added San Francisco and Tia Juana to its schedule, acquired the airline between Cheyenne and Pueblo, via Denver and Colorado Springs, and put on a twelve-hour service between Los Angeles and Kansas City. It then acquired Standard Air Lines with its service out of Los Angeles across Arizona to El Paso. Maddux Airlines put Ford transport planes into the air between San Francisco and San Joaquin Valley points and Los Angeles and San Diego and Agua Caliente, Mexico, and added an Arizona service. Transcontinental Air Transport began its service in conjunction with the Pennsylvania and Santa Fe railroads across the country, and then acquired the Maddux system in California in connection with its eastern opera-

tions. Other airlines came up in California, providing additional service up and down the Coast and into Nevada.

Outside of Santa Barbara the prominent cities in the state are now served with first-class airplane schedules and the spokes of the hub radiate in every direction except over the Pacific to Honolulu and beyond. And that is being definitely provided for, but since it calls for dirigible airship service on a larger scale than heretofore it is not feasible to make the installation immediately. California will be the base of operation of a new feature of Naval aeronautics as soon as the great dirigible airships now being constructed at the Goodyear factory at Akron can be completed. This calls for an airship base at a California site selected by the Navy, where more than five millions dollars will be expended and which will be one of the great airship stations of the world. Hangars larger than any others in America will be erected and a training college will be established. These airships, which are each of a gas capacity three times that of the Los Angeles, will be able to make flights to the Panama Canal, to the Philippine Islands or to Alaska with ease. These possibilities are an interesting showing of the position of California as a great hub of aeronautical transport.

Immediately following this establishment of the Navy's airship base will come an equally large devel-

opment in commercial aerostation. Airships having a gas capacity of more than five million cubic feet are to be built to fly between California and Honolulu. This has already taken definite shape as a commercial project, and, with the shortening of time between California and New York, will make San Francisco and Los Angeles halfway in time between the most westerly and the most easterly cities of these United States. The tonnage-carrying dirigible airship also recognizes this state as a hub of air transportation.

Naturally any hub of aeronautical activity must have airports around which this hub is to revolve. In this respect California is not behind the rest of the country. Municipal and private airports are being developed which can handle large traffic. San Francisco has gone out of her county and established Mills Field as a well-equipped city airport. Oakland's municipal airport, likewise outside its city limits, is famous throughout the aeronautical world. Its main runway is 7,200 feet long, and the airport is equipped and maintained with thorough modernness. San Diego has constructed a unique municipal airport by the filling in of tidelands, which provides a modern airport within a short distance of the business center of the city. It, in conjunction with the Marine Corps port which it adjoins, will have a wide runway more than a mile in length. Long Beach had a well-known

municipal airport over its water-bearing lands, thus happily combining two municipal features; it is a combined commercial, school, military and naval air headquarters.

Sacramento, Fresno, Bakersfield, Alhambra, San Gabriel, Santa Maria and other cities have airport developments with airway or special developments. The Curtiss interests have airports at Alameda, Glendale, San Mateo and Mines Field, the latter being on the Los Angeles airport. The Boeing System has an especially fine airport adjoining its new factory at Burbank. The Grand Central Airport at Glendale is one of the busiest in the state, with numerous transport airplanes, state and transcontinental, arriving and leaving every day. Western Air Express has a remarkably well planned and equipped airport at Alhambra. Just across the boulevard from it is Mission Airport, of San Gabriel, a novel development in that the flying portion is surrounded by units owned by flyers, airlines, manufacturers and others using the airport. Los Angeles Metropolitan Airport, up the San Fernando Valley, has runways in all flying directions 4,000 feet long and is modernly laid out and equipped. There are numerous other smaller airfields in and around Los Angeles, nearly a hundred all told in Los Angeles County.

To movies and subdivisions, Southern California has added a new industry which, in enormous strides,

will soon outstrip all other activities, in volume of business and in breadth of activity. That new industry is aviation. The facts, because they are new and startling, smite the beholder.

Los Angeles has potentially more than one hundred airports and landing fields, the majority of which will probably be Class "A" airports.

More than two hundred airplanes take the air every day at Los Angeles on scheduled routes and on business errands to all parts of the nation and Mexico. California leads the nation in the number of planes in operation.

Forty per cent of the aviation industry—manufacturing, flying and operation—centers in Southern California, in and around Los Angeles.

One-fifth of the pilots in the industry are in California. Los Angeles' airports are not confined to the ground; a roofed-over terminal is being built in the very heart of the city.

So Los Angeles calls herself "The Air Capital of the West." It is virtually the "hub" of the nation's air lines, just as New York is the financial center of the industry.

All the larger manufacturing companies are either establishing or have established huge branches in Los Angeles.

The new transcontinental rail-plane combination

services terminate on the Pacific Coast in Los Angeles and San Francisco.

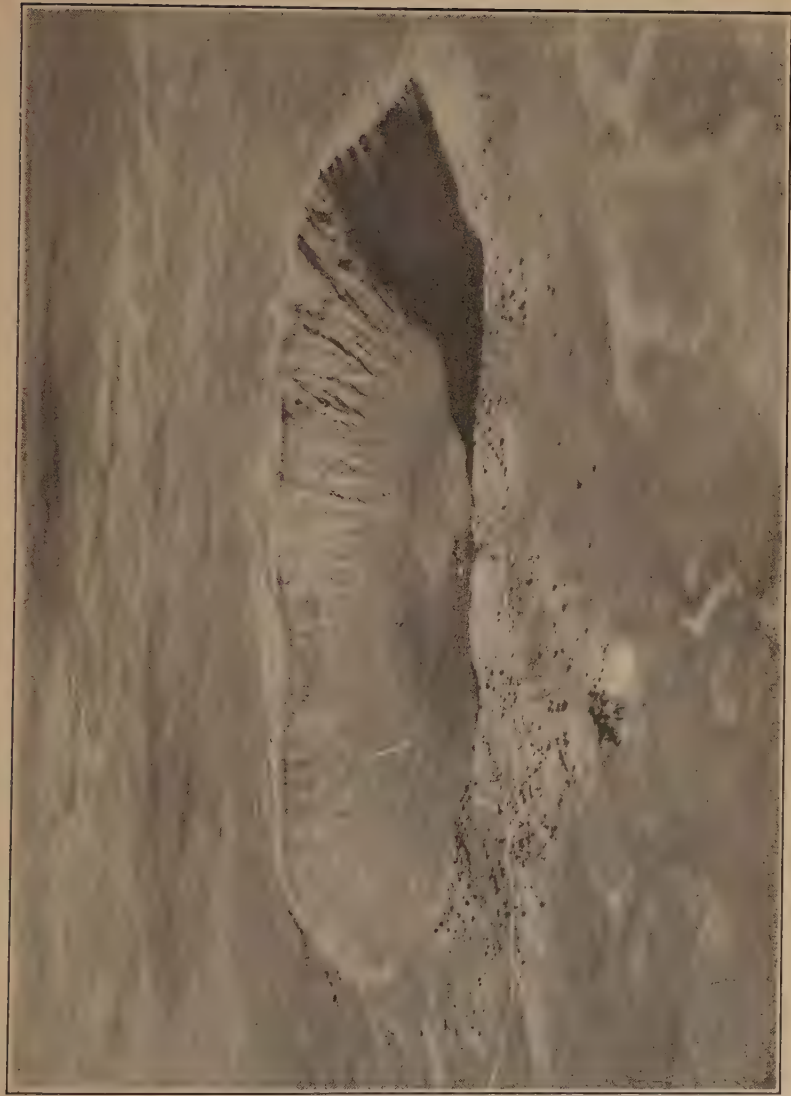
But the City of the Angels is more than a far-western outpost of aviation in the United States. She sees herself in still another role—that of main headquarters in America for a trans-Pacific air transport service.

Ambitious projects are under way for a lighter-than-air dirigible line between Los Angeles and Honolulu. These follow in the wake of successful thrusts over the Pacific such as the Graf Zeppelin's globe-circling trip, the round-the-world flight in 1924 and the most spectacular and most *significant* flight of all—that of the Southern Cross across the Pacific to Australia.

The flight of the Southern Cross, stunning in its appeal to the imagination, pioneered a field for heavy craft air transport undreamed of—that is, except by air-minded citizens, aviators and financiers of Southern California. They have dreamed of it. And—the dreams are in process of fulfillment.

The Southern Cross' flight was the first real indication that the Pacific would be bridged by air, and non-stop flights to Tokyo are now being considered with as little concern as a flight from New York to San Francisco caused when the first transcontinental flights were being undertaken.

In the midst of this new activity in Southern California have come many new projects. New aviation companies are being rapidly formed both for manufacture of planes and for transport service. A survey of the field indicates that the groundwork has been done to provide for an industry that will quickly approximate a total investment of \$500,000,000—half a billion dollars!



Meteor Crater, Arizona, 400 Feet Across, 600 Feet Deep. Western Air Express Planes,
Los Angeles to Kansas City, Pass Directly Over this Scenic Wonder.



Fokker F-32, Over New York Harbor. Seating Capacity Thirty Passengers, Sleeping Capacity Sixteen Passengers. Now in Service Western Air Express.

CHAPTER IV.

NEW TRAILS OVER OLD

No one in our country can say today that he has seen America unless he has traveled a considerable part of it via air. This is not deprecating the marvelous service of our American railroads; I would not ask them to be more luxurious or more efficient than they are. Nor do I forget the wonderful improvement of the open road, where one may travel with his own car or in a comfortably appointed motored stage.

The ground vehicles do not show you a place—they take you to it. Actually to see it you must fly above it. This applies whether you consider a city, a national park, a great canyon in the high mountains, an evidence of man's industry or nature's grandeur anywhere. It applies equally to a wide sweep either of cultivated or uncultivated country.

Today you may fly in luxury over both kinds and see America as it was never seen before. Time does fly, as an airline circular tells us, but flying does a great deal more than save time. Its greatest influence is that boon which transportation has always furnished—acquaintance and understanding by one part of a country with another or by one part of the world with a foreign section. Frontiers, whether geograph-

ical or mental, are constantly opposed as barriers by the growth of transportation. Aircraft naturally recognizes no frontiers; it was because of this that laws and regulations regarding flight were so quickly and so uniformly standardized throughout the world.

This new acquaintance, these new visions offered by air transportation, are already yielding a tremendous influence everywhere. The vigor of business is quickened, the essences of travel are broadened, one's view becomes air-wide rather than alley-wide. It is so in Europe, it is so in the Americas, it is being made true in all of the other continents.

This is certainly the case in and around these United States. Our principal passenger-carrying airlines are flying nearly a hundred thousand miles a day, the authorities tell us, and we haven't seen anything yet. The passenger business of the American airlines more than triples every year. Night flying is increasing, and the sleeper-plane with its well-lighted airway and radio protection is already at hand. "You can no more do that than you can fly," an expression so familiar to our grandparents, is unknown to our sons and daughters. They know you can fly, and their proverb is, "And how you can fly!"

Try it yourself and you will discover a new world. As a wild guess—the airline operators themselves don't know how many—probably three and one-half to four million persons will take some sort of an air

trip in the United States in 1930 as passengers with some sort of aerial service. Approximately three million passengers flew in this country in 1929.

An advantage of this flying is that it will make scenic America out of Rochester or San Salvador or Jacksonville or Topeka, and you are not compelled to go to Niagara Falls or the Yosemite or some other distant place to get a remarkable sight. Practically every city now has its air-seeing service, competently operated at very reasonable rates.

There are two principal ways to see America from the air in a large way. One is by the transcontinental or half-transcontinental airlines; another is by using one or more of the scenic air routes, which vary in length from a short jump, as from the city of Los Angeles to Santa Catalina Island, or a tour of our national parks. There are now three major connections of transcontinental airways and two other under survey. The Boeing System operates two through airplanes daily each way between San Francisco and Chicago. Transcontinental Air Transport, in conjunction with the Pennsylvania Railroad and the Santa Fe Railroad, books passengers through between New York and Los Angeles or San Francisco. Western Air Express makes the flight daily with a plane each way between Kansas City and Los Angeles in twelve hours of flying.

Let us fly over the Transcontinental Air Transport

system as an example. The Pennsylvania Railroad has characteristically put on the "Airway Limited" for its part of the service. You board it in New York or in Washington early in the evening for a night's journey to "Port Columbus, Ohio," where the airliner is to pick you up.

Perhaps the first indication of your thoughts is that you become weatherwise. You look to the west to see if there is an indication of stormy weather, and you investigate what the weather man has to say about the morrow. Then air maps take the place of railway folders before the night's sleep.

"You-all gwine fly," the porter says in the morning, "time for breakfast."

The train stops at Port Columbus, which is seven miles east of Columbus, Ohio, about eight o'clock, and the air passengers leave it to meet the uniformed courier of their airplane. He represents the company on the flight into Oklahoma and is both conductor and traveling companion. The airport is to the north of the train, a few steps from the pullman car to the airplane under a weather-protecting covering. There are all the station conveniences which may be expected, housed in a modern brick building with its observation tower. A large hangar and machine shop are close by, and two long paved runways stretch out on the field.

Tickets are checked, passengers and baggage

weighed and placed aboard, and the windows are shut to keep out dust or mud while "taking off." The pilot tries out the three motors, first singly and then all together. They turn over to his satisfaction and we start rolling down the runway. Not long, however, for we are actually "off" on our air journey—off the earth and on our way at one hundred miles an hour or better.

The flight is not started without a great deal of preliminary precaution. The weather is known along the route ahead, and if it is not satisfactory for flying these necessary precautions are taken. Weather hazard is accurately estimated, and once the start is made the company's own weather bureau, using teletype and radio, gives the pilots a complete picture of what he faces. He carries on with assurance that any changes will be sent to him as he flies. With the flexibility of airplane flying he can detour around a localized condition or speed out of it or otherwise to maintain his standard of safety in flight. There are more than seventy "off-line stations," which view the weather on both sides of the air route, and ten weather bureaus along the route.

What you see as you fly depends partly upon weather conditions. If the airplane is flying through rainy weather, which it can safely do except in very bad storms, your vision is naturally restricted, but in clear or partly clear weather you may see what

you yourself make of your opportunity. There are passengers who have no outlook beyond a game of bridge, but that is far from the average American attitude.

The lady who cannot live without her darling little dog will not go by airplane, for all animals and insects are strictly forbidden on passenger aircraft. If you have a pet polar bear or a Pomeranian and he must join you in Hollywood he can travel along the ground but not via air. If you travel back from Gautamala or elsewhere on the Central American airplane you cannot lug along a parrot or a Mediterranean fruit fly.

Well, let us say again that you are flying westward out of Port Columbus on a clear morning. If not too cold the windows may be slid back—no dust, no cinders or smoke, for you are above all that sort of thing. As you approach Columbus you look down on what seems to be a large bee farm; it is the Army's large general depot. You are free to move up and down the aisle as in a railway car. The courier comes by, handing out to each passenger an interesting little blue booklet with a map of the transcontinental route and other information. He will give you cotton for your ears if you are annoyed by the drone of the motors, although this is not often used, and chewing gum for changes of altitude. There is an airplane diagram available which will give you the names of

your fellow passengers. You have all the conveniences of first-class travel, the latest newspapers are taken aboard, you may send or receive wireless messages or write letters or "wish you were here" messages on souvenir postcards.

The airplane passes Columbus without stopping, and soon is past London, Ohio, and then over Springfield. The airplane does not seem to be traveling so fast as you look down at the streets and buildings, but the city is ahead, below and behind in no time at all. Then you look next off southward for Dayton, but see it as a cloud of smoke from the factories. You watch the farm country—the cows are contented regardless of airway travel—and the rivers and compare the natural map below with the map in your hand. You may set your watch back an hour if you wish, for you are now in the Central Time belt.

The plane seems to be moving faster, for it is down to four or five hundred feet above the ground. The cattle are still contented and other animals appear to be airway-broke. Indianapolis, the first stop, is approached from the north, and here we have fifteen minutes while the airplane is furnished gas and oil. The motors are tried, then we leave for St. Louis. Directly over Terre Haute and the Wabash river, and we are over Illinois, a rolling green and industrious appearing country which looks not at all as though it contained one of the world's greatest cities.

Here is a town with a lot of dots around it—Dupont, and the dots are tanks for storing crude oil.

There is an impressive sight about noon when the airplane passes directly over the point where the Missouri river joins the Mississippi. You feel yourself a pioneer. You are seeing what for many hundreds of years was a cause for wonder by explorers and Indians. The Missouri does not lose itself immediately in the Mississippi, for you trace its darker water down the wide stream for a considerable distance. You can see a great bridge, but the location of St. Louis is visible only as another city smoke cloud. Quickly, however, we are set down lightly on the St. Louis-Lambert airport, a very busy place. Pilots are changed, more fuel and oil taken on, and we are away for Kansas City, being shown Missouri on the way.

The courier sets out little tables and we have our luncheon in the air. We strike out in a straight air-line over rolling and wooded country, crossing the Missouri. The luncheon is very good, the scenery below is interesting, a great deal more so than on the train, and we are to be in Kansas City in two and one-half hours from the time of leaving the St. Louis airport. Below and to the right of us appears a small city with a beautiful setting of buildings around a campus. It is Columbia, with the University of Missouri. We pass over the Missouri a number of times, come into more open and more evident farming coun-

try and then land at another busy airport, that at Kansas City. From the air it is a metropolitan looking place, well spread out and with its tall buildings up on the bluffs and packing houses, stock yards, factories and railroad yards on the surrounding river bottoms. Here the Missouri receives the Kansas river, but this is not nearly so impressive a sight as the junction of the Missouri and Mississippi.

We go out of Kansas City over the valley of the Kansas river, turn to the southwest and head for Wichita. You see a very different Kansas from that of the politicians and the newspapers, a green and regularly laid out farm section with numerous cities having a prosperous air, but mostly small. Along the Kansas river the country is rolling and wooded, but beyond Emporia it is flat and one may see the farm patterns for miles. Then, of a sudden it becomes an oil country with countless derricks and truck trails. Then the flat and treeless land causes your neighbor to say "cattle country." We can see the herds of cattle, but they give way again to oil wells. Bacon and eggs, oil and gasoline, steak and green things must be plentiful in Kansas.

Wichita, where we land next on another fine airport, appears to be a metropolis of the grain, oil and stock section. Grain raising is especially apparent south of the city. We see rivers with more sand than water in them, but no doubt they are roaring enough

in the springtime, when they are fed from the snows of the far-famed Rocky Mountains and the high plains. The flat plain country gives way to a more broken and unused country as the airplane approaches Waynoka, where we take the Pullman car for a night journey over the Santa Fe Railroad on its train called "The Missionary." Two of the famous adjuncts of the Santa Fe are the Grand Canyon of the Colorado and the "Fred Harvey eating houses." There are not any of the former at Waynoka, but the dinner at the Harvey restaurant is good enough so that we do not miss the Canyon.

We come into Clovis on the Pullman at 8:20 o'clock in the morning and leave on the airplane at 8:10 o'clock, following a Harvey breakfast. The discrepancy in time is due to the change from Central Time to Mountain Time, lopping an hour from watches and clocks. In flying away from Clovis we change from the farming country to the country of ranches. The "cattle country" is noticeable as we come through the Texas Panhandle on the train in the early morning, wide-stretched flat plains with few towns and houses. From Clovis on we have the same country in New Mexico—no farms, but mile upon mile of ranches.

As we fly toward the mountains we are climbing until, at Santa Rosa, we are four thousand feet over land and objects are not distinct, although the air is

very clear. The passengers who have never been West think they see the Grand Canyon, but it is Pintada Canyon, quite different but a sizeable gash at that. Rougher ground, and we see mountains. Through a pass where we are close enough to study the mountain crags, and we are flying over a wide sandy stretch and going down toward Albuquerque. We swallow and chew gum to offset the difference in air pressure in our ears.

At the airport a little after nine o'clock we cannot see Albuquerque, but have our fill of mountain gazing. When we get away again we fly over Albuquerque and the Rio Grande river and on over a desolate country, greened here and there by irrigation for alfalfa fields. Then we pick up the winding line of the Santa Fe again. Black lava beds, then a more mountainous country with small trees and then larger trees are unrolled as we fly along. We come over more level country again, and El Morro, the Inscription Rock, is pointed out below and to the left. Then we are over the Zuni Indian reservation and the red Zuni Buttes. Into Arizona and we pass the colorful and very interesting Painted Desert.

We land at Winslow and are away again and pass Crater Mound, a cone with a deep cup in it, evidently more interesting from the air than when looked up at on the ground. The beautiful Francisco peaks and the town of Flagstaff are north of us, the peaks rising

considerably above our own altitude and covered with green forests and necklaced with numerous lakes. The plateaus with their extinct volcanoes are then below us.

The weather is cool and very pleasant, but when we glide down at Kingman, in the western side of Arizona, we find desert heat and desert sunlight. And west of Kingman we find desert flying. Barren sandy, rocky stretches with no sign of cultivation for miles—no green below until we see the Colorado river which marks the boundary between Arizona and California. Along the river there are lines of green, then desert and more desert, parched and unclad mountains, sand and sand and sand. We cannot forego feeling glad that we are flying over this country and not ground-traveling. We are conquering the desert as men have never conquered it before.

Another hour of sitting in comfortable chairs and feeling like conquerors of the desert and we can see off to the south and west of us high mountains which look like something else again. The map says they are the San Bernardino Mountains. To the west of them is the Sierra Madre range, and between these two ranges the airplane glides into the great plateau which stretches, orange-laden, to the sea. In the early evening there are more than sixty cities to be seen as an ocean of twinkling lights, an unforgettable sight. By daylight the level land is hazy and the

cities are not so distinct, but we can see a large number of them, and the white tower structure which is the Los Angeles city hall is a prominent mark. The airplane comes to rest at the Glendale port about five o'clock, Pacific Time, and we have crossed the continent!

The Pacific Coast division of Transcontinental Air Transport, Maddux Air Lines, serves the principal cities of California and dips into Mexico. It has numerous scenic and pleasure tours to interest the air traveler. The T. A. T.-Maddux Air Lines use the latest Ford airplane with the three-motor equipment.

T. A. T.-Maddux Air Lines operate, among other lines, between Los Angeles and San Francisco, and so do Pacific Air Transport, a part of the Boeing System, and Western Air Express. The latter does not land between terminals, but the others offer stops at Fresno and Bakersfield. On these trips the north-bound passenger is flown over the Sierra Madre Mountains just north of Los Angeles to the great San Joaquin Valley. This is prairie country, flanked on the eastern side by the high Sierra and on the western side by the Coast Range. For three hundred miles the great Sierra Range is in view as it is never seen from the ground, its snow-topped, saw-toothed ridges standing more than thirteen thousand feet above the sea level. They are as mysterious and

inscrutable as any other high mountains in the world to the air traveler, but to the motorist or busy worker below they are usually not seen at all. A feature of the San Joaquin Valley noted by the air traveler is the many tile-roofed school houses with their yards. The eastern side of the valley is all cultivation and improvement, but on the western side, once the numerous groups of oil wells and tanks are passed at the southern end the airplane passes mile after mile of unsettled prairie.

Landings are made at Alameda Airport, at Oakland Municipal Airport or at Mills Field, the latter being the municipal airport of San Francisco. The Oakland airport is one of the leading ports of the country, highly improved and with a runway seven thousand two hundred feet long, and is the pride of every Oaklander.

The main line of the Boeing System is the pioneer air mail route between San Francisco and Chicago. It is equipped with large airplanes built in the Boeing factories especially for the service. Two airplanes a day are flown each way over the airline, a "day plane" and a "night plane," carrying passengers, mail and express. The day plane leaves from each end of the line at 8 o'clock in the morning and arrives at the other terminal early the following morning. The night plane leaves Chicago and San Francisco every evening at 8 o'clock, and lands at the opposite termi-

nal well in time for dinner the following evening. Day and night, winter and summer, these planes are in the air and "the mail goes through."

If you take the morning plane when San Francisco Bay has one of her fine, clear days, you see a magnificent panorama. San Francisco still sits serene overlooking the Golden Gate. Across the strait Tamalpais stands guard, not a high mountain but one well worth knowing. The bay is busy with bustling ferries, freighters coming in from across the world, and other sea craft, while the railroad barges and the tugs fill in. Ships of the navy watch all this while at anchor. It is a busy, beautiful bay as you see it from the air.

We wing to the northeastward and look down at the great traffic bridge spanning the Carquinez Strait where the wide Sacramento River seeks the great bay. Traffic is flowing across the bridge and river barges and boats slide under it. We follow the Sacramento through the delta region, where fine vegetables are grown and where the river pirates once darted in and out. Then comes Sacramento, California's capital, still on the level land, but beyond Sacramento the ground rises towards the high mountains. The rivers are not bottom side up, like those in Southern California, but seem deep and wide. The ground is laid out for close cultivation with many groves of trees.

Heading over the great Overland Trail we reduce days to minutes almost, as compared with the progress of the first settlers who came down the mountains after months of a journey that the air passenger counts in hours.

A full book would be required to describe the flight over the high mountains, and then the description would be pitifully inadequate. The best that can be said is that you are placed above the mountains and can feel above them. But the awe of their immensity is there in a different way from that of the climber on foot. You see so much more of them, so many peaks that you realize something of what the high Sierra is. The lakes that now and then glisten in the mountain air seem small, although if you were to visit them by automobile you would think the opposite.

The mountains dwarf any works of man about them, but you know there are electric transmission lines, railroads and their tunnels, highways and other works where men have set out to subdue the mountain ranges. Any set of these costs millions of dollars more than an airway, but the airway conquers as man has only dreamed of success in the past. It is a wonderful feat to be able to fly comfortably at nearly two miles a minute over the mountainous expanses of the country. You fly in Boeing planes over both the great ranges, the Sierra Nevadas and the Rockies.

Reno and Elko are the stops in Nevada with well-

fitted airports. We looked around for divorcees at the former, but were not sure that we saw any. It was ten o'clock in the morning, so no doubt they were not yet awake. Two hours out of Elko and we are over the Great Salt Lake and its attendant desert of salt, a peculiar and interesting sight, and down at Salt Lake City at 2:30 o'clock. Our watches advance an hour to Mountain Time, and when we get over the "hump" and into Cheyenne, Wyoming, it is 7:30 o'clock. We streak over Wyoming and Nebraska and are in Omaha at the Missouri River at half-after midnight. Then across Iowa, with stops at Des Moines and Cedar Rapids, and into the Chicago field at six o'clock in the morning. At that time Chicago is certainly not at its best and busiest.

We decide to take an evening train to Kansas City and catch the twelve-hour Western Air Express liner to Los Angeles. After a conventional night journey on the Pullman we are soon out at the airport. There is no additional purchase of a ticket, as the ticket bought in Chicago was through to the Pacific Coast under an agreement Western Air Express has made with a large number of railroads which touch Kansas City.

The airplane was in readiness at the field, a large Fokker with three motors and a commodious and luxurious cabin. The Fokker Manufacturing Company and the Western Air Express are affiliated in

ownership by mutual interests. Anthony H. G. Fokker is one of the world's master builders of airplanes. He is now an American citizen, and even before he came to this country his airplanes were among the best performing in Europe. We learn that the Fokker company has acquired the rights to build the gigantic Dornier plane, which will put it into the class of carriers of one hundred passengers on one airplane.

From the very start an atmosphere of efficiency characterizes Western Air Express. It is noticeable with all the large American airlines, but it dominates with this airline and is seen in mechanics and others about the airports as well as in the crews.

Western Air Express started in 1926 with the mail route between Salt Lake City and Los Angeles, which was soon developed to carry passengers. Its two million miles of flying show an efficiency record which is but a fraction of a per centum less than one hundred per cent. This is over forbidding mountainous and desert country where the wind *does* blow.

The Western Air Express system now may be likened to a gigantic hand of transportation placed over Los Angeles and a bit of Mexico, with the thumb touching Texas at El Paso, the index finger stretching to Kansas City, the second finger over Cheyenne, Denver and Pueblo, the third finger on Las Vegas and Salt Lake City and the little finger touching San

San Francisco and Oakland. At San Francisco an affiliated line reaches to Portland and Seattle. The schedules are all fast and through flights; the airplanes operating between San Francisco and Los Angeles make the trip of three hundred sixty miles in three hours as against twelve to fifteen hours by train or automobile.

We are out of the Kansas City airport and look over the two cities, then head for Wichita, viewing Kansas and its patterns of farms, groups of oil wells and tanks and herds of cattle on the way. The air is clear and the flat land has a horizon many miles away, affording a wonderful view of agricultural America with an intrusion of the oil industry. Cement and salt are large industries, too, but we do not see them or coal mining from an airplane.

Our next stop after Wichita is at Amarillo, which is surrounded by plains and wind—not a Texas political wind, but an honest hardworking wind that knows what a wind should do and does it. Captains of the oil industry are here also and the city is a busy one. But we are soon on our wing and out of Texas.

More broken and rising country, and before we know it we are at the Albuquerque airport. The stop is incidental and we swing over the high plateaus, the lava beds, the Painted Desert, with real mountains fringing our horizon. A brief stop at Holbrook, Arizona, and we are off again with another stop at

Kingman, in the same state. Here we are facing the desert and getting its heat. The rest of the journey would be terrifying in that heat by automobile, but the plane mounts up and we sip some ice water and lean back in the comfortable lounge seat and—well, you don't laugh at the desert, for there is something awesome about it, something dreadful. Mile after mile over an ocean of sand, superheated by a cloudless sun, for many years almost unconquerable, yet it is an incident of an hour or so in your trip. Those who know the desert by pack experience over it, old prospectors especially, marvel at the flying over it. They had never dreamed that it could be subdued in this way.

The desert is soon passed, and we slip through El Cajon Pass between the Sierra Madre and San Bernardino ranges and down over the orange groves, miles of them. We are on the Western Air Express airport at Alhambra in a few minutes. Here is a great six-sided hangar as a roundhouse for the airplanes, a \$100,000 passenger depot and many other improvements. A short automobile trip, which to me seems a great deal more dangerous than airway travel, for in the air there are no trucks, no flivvers, and then we are in the business center of Los Angeles. We said goodbye to Kansas City at eight-thirty in the morning and said hello to the business buildings of Los Angeles before going to an early dinner.

Here are three trips practically halfway across the continent in ten to fourteen hours of luxurious travel—half a day as against the half a year of the foot pioneers.

Western Air Express has combined with it the Standard Air Lines, which also operates an over-mountain, over-desert air schedule between Los Angeles and El Paso through Arizona towns. Its flight with three-motored Fokker monoplanes is over the Imperial Desert and the Salton Sea to Phoenix, then on through Tucson and Douglas. At El Paso a change is made to a sleeper on the Texas & Pacific Railway, and in the morning an airplane of the Southwest Air Fast Express is waiting for the passengers at Sweetwater, Texas. It flies into St. Louis at four o'clock that afternoon in time to catch a night train for New York.

Two other air transport companies are closely affiliated with Western Air Express. These are the Mid-continent Air Express, with headquarters at Denver, and operating from Denver to Wichita and from Denver to Albuquerque, with plans made to extend the line on from Albuquerque to El Paso; and West Coast Air Lines, extending from San Francisco to Portland and Seattle.

There are other flights available in the western part of America of tremendous scenic attractiveness. The national parks may be toured in the summer time,

either in a specially chartered airplane with all luxuries or on tours arranged by Maddux Air Lines. Alaska, the Yukon, anywhere on the Pacific slope, Mexico, Gautemala, San Salvador, and their scenic features are available to the air traveler today.

The Mexican and Central American tour is one of the most remarkable in the world, yet in Los Angeles it seems to be taken as a regular business venture. Undoubtedly the man who built the Pickwick Stages system up from a line of about thirty miles long to a nation-wide system with more mileage than any one railroad company could fly equally as well. Pickwick Airways flies its airplanes from Los Angeles, through San Diego, Tia Juana and Mexicali and Baja California, Nogales, Hermosilla, Guaymas, Los Mochis, Culiacan, Mazatlan, Tepic, Guadalajara and Mrelia to Mexico City, then on through old Oaxaca, San Jeronimo, Tonalá, Tapachula and Gautemala City to San Salvador, with offshoots to Flores and San Cristobal. They fly down there and they fly back again on schedule.

Aside from the delightful quaintness, the age-old monuments of past civilization, the metropolitan, European-like City of Mexico, the mosaics of plantations, the colorful cities, there is a marvelous spread of scenic beauty. The wonderful and seductive West Coast of Mexico, with a climate unequalled anywhere else in the Americas, is flown for miles with the Gulf

on one side and the mountain range on the other in subtropic sunshine. Yet it is in the tropical section that the airplane view spreads out the most entrancing picture. Plantation after plantation, forest after forest, banana trees, coffee production and other tropical industries are mingled with a wild and otherwise impassable land. The airway opens this wonderful country so that it is most easily and comfortably accessible. Europe holds no charm better than the flight along the Pan-American airways. Following the Atlantic coast line there is a choice between the fast seaplanes of the Pan-American System and the New York, Rio and Buenos Aires Air Transport Line. The latter offers direct communication between New York and Buenos Aires, while the former operates through the West Indies and Central America, and from the Canal Zone to Santiago, thence to Buenos Aires over the Andes. There is something particularly inspiring in the building up of swift passenger and mail communication between the United States and Latin and South America.

If you care anything about seeing America—the oldest as well as the newest, the most stupendous and the most wonder-inspiring—there is a new tour-master at your call with a new and eminently more satisfactory way of seeing America. This is the commercial air service of the country.

CHAPTER V.

FLYING DE LUXE

Within the next twenty-four months it is not at all improbable that you will take a trip, or many of them, in an airplane. The airplane will shortly become the topic of conversation just as the bicycle was the topic back in the nineties, and as the automobile has been in the last twenty years. In addition to taking note of the kind of car that our neighbor drives we will want to know what kind of airplane he flies, or where he has been on airplane trips, what he has seen, and where he expects to go. This is an immediate prediction. No one would dare to put any limit on a prophecy of what aviation will mean to the individual in America within the next ten years.

Americans are self-sufficient, but even so we have not yet reached the point where we can withdraw ourselves from our European beginnings. The airplane is an American invention, but frankness compels us to admit that it had its more recent development in Europe. From Europe has come the inspiration which will see its ultimate and complete development in this country.

Every summer my wife and I spend a vacation in the air. These summer excursions have taken us to Canada and Mexico, Alaska and Central America.

They have extended throughout Europe and have carried us from the northern stretches of Russia across the Mediterranean and down the African coast.

During the early summer of 1927 we completed a 20,000-mile journey by air which took us into all the countries of Europe but four. The experience brought us an astonishing conviction of Europe's progress in commercial aviation.

Air travel abroad is so simple, so safe, so amazingly systematized. Planes in regular service depart on scheduled time. They arrive on scheduled time. Weather is ignored. The planes go, anyway. Journeying by air in Europe is as much a matter of course as travel by rail in this country.

Some of the ships carry as many as twenty-eight persons. Accommodations approximate in comfort the Pullman accommodations in this country. The planes have easy, reclining chairs; excellent meals are served, and many of the ships have bars. The rail may be missing, but scenery takes its place.

There are several great trunk lines—the French lines, the Dutch (K. L. M.) lines from Paris to Amsterdam and Malmo, Sweden; the great German Luft Hansa system, which virtually covers all Europe, and of course there is the Imperial Airways operating between Paris and London, and London-Cologne-Basle, and also between Egypt and India.

We used all these trunk lines and innumerable

shorter routes. One particularly interesting trip was a 3000-mile air journey through the Scandinavian countries, and around and across the Baltic.

We had no forced landings, and our planes departed and arrived on unbroken schedules. Only once were we delayed by fog, hanging low over the mountains between Prague and Vienna.

One brings a chaos of impressions from a journey like this, but there is one observation which seems more important than the rest: Flying is safe.

As a commercial undertaking, flying in Europe pays. Rates have been lowered virtually to those for rail transportation. The fare from Paris to Berlin is \$50, and passengers are allowed sixty pounds of luggage. We paid \$12 for eighty pounds excess luggage. The first-class train fare for the same journey is about \$50.

The average planes carry about 2000 pounds of freight or express, in addition to ten or twelve passengers. Burning from ten to twenty-five gallons of gasoline an hour, they find a safe margin of profit.

All over Europe flying schedules are perfectly articulated with motor and train schedules. On the German lines the coefficient of accidents recently was 0.003 per cent, and during this particular year there was no loss of life.

The number of airports is constantly increasing. There is not a city of economic importance in Europe

which does not have an airport. These flying fields, with their fine appointments for the convenience of passengers, are more like country clubs.

One is wafted down gently to the field—European pilots have amazing skill in landings—and descends to surroundings of such well-ordered ease and convenience as to suggest afternoon tea, and then, perhaps, a round of golf. You pick out your luggage, as you pass through an exit and are conducted to a motor by an attendant.

As our plane reached Berlin, on its flight from Paris, the wheels touched the ground at almost the exact second of the flight schedule. The swift, orderly handling of traffic and conduct of passengers went forward with military precision. There was an exchange of salutes, a clicking of heels and short, sharp commands as subordinates appeared.

Other planes were arriving and departing. There was no confusion. Officials and attendants seemed as perfectly mechanized as the engines which drove the planes.

The morning after our arrival in Berlin we visited the offices of the Deutsche Luft Hansa System. The company owns and occupies a luxurious modern office building.

Its system is a complete, spiderlike network, covering virtually all Europe, radiating from Berlin to Moscow, Stockholm, Hamburg, Amsterdam, Paris,

London, Vienna, Rome, Königsberg, Petrograd, Basle, Geneva and Madrid. The planes for the most part are Junkers, all-metal planes, Fokker monoplanes and planes of the Dornier Wal and Rohrbach types. The Albatross is virtually the only biplane in use in Germany.

The Luft Hansa ships are flying over 50,000 miles a day. They consume nearly one million gallons of gasoline daily.

In our air tour of Germany, we traversed fields, lakes, forests, mountains, cities, villages—every known terrain, through all weather. We looked down on Hamburg, Stettin, Munich, Frankfurt, Innsbruck, Strasbourg, Nuremberg—all of Germany.

Even an American train service could hardly have taken us the same distance with such unfailing punctuality. The big ships rode unwaveringly through storms; radio direction finders steered them unerringly through fog and night; compasses and charts seemed infallible; as did pilots and mechanics working as impersonally as the instruments under their hands.

Noise is being rapidly choked to a minimum, and we talked easily across the aisle of the luxurious car. Women were flitting about here and there, shopping or visiting, and village bankers were getting their first acquaintance with big cities and big finance.

There was on every hand evidence of a new Ger-

man unity coming out of this commingling of isolated peoples. I am no Utopian, but see in all this a far advance toward European and possibly world unity as well.

Germany was limited by the Versailles Treaty to the construction of commercial airplanes, and for this reason, and through economic necessity, has taken the lead in commercial flying, leaving all competitors far in the rear. In France and England, the emphasis still is on the subsidized government routes to the colonies.

France has two great systems; one reaches from Paris to Prague, to Constantinople and the near East; the other from Paris to Berlin and Moscow, alternating daily with the Luft Hansa. Another French colonial line crosses the Mediterranean, via Toulouse, Casablanca and down the West Coast of Africa to Dakar.

Two factors have combined to stay the development of aviation within Great Britain—one, the perfection of the train service in an area of congested population; the other, the prevalence of fog. However, the Imperial Airways has brought its air liners to a high state of perfection in passenger and mail traffic with the continent, particularly to Paris, and England is sending planes to the farthest reaches of the Empire. The Italian government is fostering both commercial and military power, range, fuel economy and safety.

And radio has been so improved that at night or in fog planes constantly get their bearings from the air.

I talked about the "flying business" with Herr Otto Merkel, director of the Luft Hansa System.

"I believe one could say commercial aviation is safely established in Europe," he said. "I don't mean that the Luft Hansa, for instance, is on a sound dividend basis. But that does not bar it as a sound commercial enterprise. There are still some government subsidies.

"Assuming that swift and economical transportation of goods and passengers is urgently needed and commercially profitable—and no one can deny this—we abolish all the intangible factors at once, and our problems narrow down to definite and tangible requirements. They are technical problems. We know we can solve them.

"The next forward step in aviation will be in the laboratory and testing fields. We have absolutely no misgivings about the result. Without exception there is no line in our system which has not been opened on grounds of commercial expediency."

CHAPTER VI.

AIR-TRAVELED GERMANY

The mannerchors and rathskellars are still on the ground in Germany, but no one can say how long it will be before they are in the air. I have been aloft with flying burgomasters, grandmothers, knitting as they fly; chess players, itinerant German bands, scarred young duelists taking their "wanderjahr" in the air, German professors bound for Switzerland minus books, but with their alpensticks and knapsacks, field glasses and what-nots; diplomats in morning coats, schoolboys in smocks, matrons and maids, and even babes in their mothers' arms.

Germany not only is in the air herself, but she has practically taken the commercial aviation of Europe. Limited for several years under the Versailles Treaty solely to the manufacture of commercial planes, Germany concentrated her commercial and mechanical genius on the development of air traffic as a national business. And so astounding a record has been the extension of her air lines, that the development of commercial aviation in Germany is one of the most interesting stories of all post-war enterprises. Today the Luft Hansa has more than one hundred beautifully equipped airports—in fact, and in Germany every city of any importance owns and operates its

own municipal airport. The Luft Hansa has some 250 planes flying on daily schedule over fixed routes, almost as definite as a transcontinental railway, and estimates that its airplanes since 1927 have been covering a distance of approximately 50,000 miles daily. Not only is every important German city linked up in the air chain, but there is a German line to every important city of Europe.

This record development of commercial aviation in Germany is due very largely to the enterprise, the skill and foresight of one huge aviation company, the Deutsche Luft Hansa. The organization and success of this company is due very largely to the vision and energy of Otto Merkel, one of its present directors. The financing was done by German shipping interests and the organization combined the Junkers and Aero Lloyd companies into one system. Merkel and Wronsky came from the Aero Lloyd and Milch, the third director, from the Junkers company, and most of the sub-executives of the Deutsche Luft Hansa corporation had experience with one or the other of the German pioneer companies. Organization of the Deutsche Luft Hansa corporation was made in January, 1926, with a capitalization of fifty thousand marks, and on June 15, 1926, the capital was increased to twenty-five million marks. The preliminary years of hard pioneering by the German Aero

Lloyd and Junkers corporations enabled the Luft Hansa company to start almost full-fledged.

The Luft Hansa handles a great deal of valuable express, including the especially valuable parcels and letters of the German postal department, gold shipments, stocks and bonds, fresh flowers from Holland, furs and caviar from Russia, gowns from Paris and Vienna and the latest table delicacies for hotels and cafes. Great quantities of newspapers went on special airplanes daily to different parts of Germany. The growth in passenger business and in freight has been steady and rapid. The standard of efficiency in service is maintained at better than 97 per cent and in safety at around 98 per cent. Everybody in Germany seems to expect the Luft Hansa airplanes to arrive and depart with a promptness equaling or bettering the best railroad standards.

Otto Merkel is an interesting personality, a vigorous, middle-aged man of the best German type, distinguished in carriage and dress, tireless in his activity for the Luft Hansa corporation and very broad and far-seeing in his viewpoint on commercial aviation. He lived for some time in the United States and speaks English perfectly. In his voice and appearance and in his pleasing informality one could sense a keen, searching intelligence, intent upon every detail that might prove of value in furthering the plans of himself and his associates for a far-reaching

German air program. He was as eager to gain any knowledge I could give him about American air commerce as I was to learn about German attitudes and progress. I was interested in meeting him because to me Herr Merkel personified the new German economic statesmanship which the world has not yet taken into full account.

When we talked of German air commerce I found him emphatic, direct, convincing. His replies to my queries were straightforward and thorough, and every now and then they would be illuminated by flashes bringing into relief the vision and the depth of aero knowledge of the man. He threw back at me direct questions regarding commercial aviation in the United States, questions not at all casual, although they bore upon future possibilities of world-wide air commerce. Although Herr Merkel told me that he had no desire to accomplish bravado exploits and was contenting himself in seeing that people are furnished with a safe means of air transportation, it was quite evident that he was informing himself on all details allied with future trans-oceanic flying, and that when the time comes making this entirely practical and safe, the Deutsche Luft Hansa will be prepared to enter the field.

The day before I met him he had commissioned Baron von Schroeder, one of the officers of the Deutsche Luft Hansa corporation, to go to South

America to develop plans for the extension of the system's air commerce to Buenos Aires and Rio de Janeiro by way of Madrid. He wanted to know comprehensively the regulations of the United States governing the landing of a German seaplane in New York harbor, and was much interested in my answer showing that this is covered in our Air Commerce Act.

Otto Merkel and his associates are building the business of the great Luft Hansa company purely with the view of making it a solid commercial success. Its value to Germany as a nation is, of course, not underestimated, and from the first the Luft Hansa has been subsidized by the government, but it is the hope of the directors, as speedily as possible, to render the company entirely independent of any need for subsidy. They are studying the problems of transportation from every angle. They are making endless experiments in the way of cutting down the cost of fuel and economy in handling passengers and freight, and they are firmly convinced that air transportation will soon be a paying business.

They have laid the foundation well. They have begun at the very bottom. They recognize that to make aviation profitable they must make it convenient, safe, comfortable and not too expensive. Their first step was to lay out landing fields properly. This they have undoubtedly done far better than any other

country in the world. Their landing fields are not only convenient, but they are colorful. Practically every city of any importance in Germany has its municipal landing field which is laid out and arranged according to the regulations prescribed by the Deutsche Luft Hansa company. These landing fields are not merely a place for airplanes to kick up the dust and passengers to crawl into their seats, but they are becoming centers of social interest.

In fair and pleasant weather the German airport is usually enlivened by the folk who come to meet or say goodbye to friends, with others who like to watch the airplanes leave and arrive. Airports in Germany are not merely fields; they have all conveniences and buildings to make up a harbor. Many of them have restaurants and some have summer gardens.

Tempelhof Central Airport, the great airdrome of Berlin, is especially attractive, both in equipment and in administration. It is a favorite place for Berliners on summer afternoons, when they can take afternoon coffee, visit together and watch the planes and passengers. There were thirty-six arrivals and departures of regularly scheduled airplanes at Tempelhof field in August, 1927, exclusive of special flights, newspaper airplanes and other non-scheduled flying. Visitors may see the field operations from one of two cafes, one an attractive summer garden with brightly colored umbrellas over the tables, and the other a

more conventional restaurant. When an airplane is coming in a siren is blown to give notice of its arrival.

One party may be waiting for the "5:15"—in Berlin it is scheduled as arriving at 17.15 o'clock—the afternoon plane from Paris and Cologne. Around 17 o'clock at Tempelhof field, or 5 o'clock in the afternoon if we put it in the American manner, there are the Paris airplane, the plane from Stockholm and Stettin, the airplane leaving for Leipzig, the arrival from Zurich, Stuttgart and Leipzig, the plane from Cologne, Kassel and Magdeburg and the plane coming in from Danzig, Königsberg, Moscow, Riga, Reval and Helsingfors. There is a great parking space for automobiles close to the administration buildings and restaurants, and it is well occupied by field visitors who drive out from Berlin. An entrance fee of forty pfennigs is charged as one drives into the field. The general effect of the buildings with their flags, the attractive summer garden near the airplane runway, the rows of airplanes and the great extent of the field itself makes a decidedly pleasing and interesting impression.

While you are seating yourself at the table the siren blows and those in the summer garden rush to the rail to look for the airplane which has been checked by the man in the watchtower. Soon you sight it yourself and watch it circle around and glide gracefully into the field, then taxi up in front of the

principal building on the field. Attendants in uniform are ready as the plane stops, a smart young boy opens the door, the passengers disembark, the boy salutes smartly as they come out. A very short time is required to unload the passengers and baggage and to comply with the passport regulations if the airplane has come across the border. The passengers are conducted to a luxurious Mercedes car almost in state, so polite and yet so semi-military are the uniformed men and boys of the Luft Hansa. One coming into Tempelhof field by air for the first time has the feeling that he is taken for some ruler, ambassador or other dignitary, so impressive is his reception, so luxurious is the car waiting to take him to the hotel and so completely is every facility provided.

Before the passengers are away from the field the siren wails again and another airplane comes in and taxis up, perhaps with passengers who had left Moscow at three o'clock or Oslo at 7:35 o'clock that morning. It's all in the day's journey to come from Moscow, Helsingfors, Stockholm, Oslo, Copenhagen, London, Paris or Zurich. Visitors to Tempelhof airport will see two airplanes arrive at the same moment from widely separated parts of Europe.

However, one is not impressed so much while at the field by the tremendous ramifications of the aero system as by the more immediate efficiency shown in the administration of the airport. There is no confusion.

Everything is taken care of with marvelous precision. No one runs about heedlessly. The planes come in and the planes go, passengers arrive and depart, baggage is handled, and all is done with expedition and smoothness that evokes admiration.

Airports in America will always be very attractive to non-flying visitors, just as the crowds for years have gone to the "deppo" to see transportation in action. It has been important, therefore, to plan American airports with facilities and conveniences for crowds. A primary feature is the cafe, and along with this must be ample provision for automobiles through clean and well cared for parking spaces. At nearly all American airports there will be occasions when there will be large crowds, and the facilities should be anticipated accordingly. When Colonel Lindbergh made his flying visit to Los Angeles on his special tour, arrangements were made for parking 100,000 cars alongside the airport and within sight of his landing spot.

These are mechanical and routine developments, important in the shaping of an airway system, but they are minor compared to the relations an airline must develop in regard to people generally and in regard to nations. The airway executive must be expert in this viewpoint as fully as he can to plan the comforts and conveniences of his system. In its transportation pioneering the airline will certainly

clear away old thought and old prejudices and open roads to great and progressive improvement.

The Deutsche Luft Hansa company recognizes that strong element in transportation known as convenience. The ease of reaching the airfield, or reaching one's hotel after landing, plays a very important part in the patronage of a transportation company. Hence the managers have made it exceedingly attractive and convenient.

The matter of safety, of course, is one of the very big elements, and from the first they have concentrated all of their mechanical genius on producing planes of the most reliable and dependable type, and of training pilots of the greatest skill and reliability.

The four prevailing types of planes in use by the Luft Hansa are the Junkers all-metal monoplane, the Rohrbach, the Albatross and the Dornier Super-Wal. These planes not only have every safety device known to aeronautics, but they are arranged to afford a surprising degree of comfort and luxury. They carry from eight to twenty-seven passengers. The heavy night planes are arranged much like an American Pullman, so that the seats may be made up as upper and lower berths for the night, and it is astonishing how comfortably one can sleep in an airplane. The Pullman airplane was developed by Dr. Hutt, who during the war constructed some ten thousand Albatross fighting planes for the German government.

Personally I visited Germany with two objects in view. One was to ascertain how the Deutsche Luft Hansa had made such a great success of commercial aviation; the other, to learn, if possible, if there was any military significance in the commercial aviation activities of Germany. As to the latter, I will say here that I was thoroughly convinced that there was not. I firmly believe that Germany is building along purely commercial lines, and with most specific intentions.

As to the reason of the Luft Hansa success, I tested their system out in a dozen different ways, flying over all of their lines, and from this personal experience I found that they afford the things very dear to the traveler, particularly an American traveler's heart—swiftness, convenience and great comfort.

CHAPTER VII.

THE THRUST OF THE DEUTSCHE LUFT HANSA

The Luft Hansa automobiles which transport passengers between the center of a German city and the airdrome are of superior quality, much better in appointments and comfort than those between London and Croyden. One of these brought us from our Berlin hotel to the Tempelhof Airdrome, when we left for Norway and Sweden. Two airplanes landed as we were having luncheon, and three others came into the field just as we were starting in a three-motored Junkers plane for Copenhagen on the first leg of our trip. We went aloft easily and were soon over the railroad tracks and headed north. Our air map told us that it was two hundred forty kilometers to Lubeck.

Just ahead on our left we saw inlets of the lakes of the Havel with many yachts lying at anchor. On we went over Spandau, where the great munition plants were located during the war; now it is a great manufacturing center. We followed the Kaiserhof, the great military highway leading to Staaken, location of a dirigible hangar and the aviation field where the Luft Hansa pilots are trained. In our first ten minutes of flying we put numerous historical places

behind us. We went directly over the old forts built in 1870, but now grass-grown and useless as forts.

At one hundred ten kilometers away from Berlin we found bad weather and passed through a rain-storm—there were two distinct layers of rain, in fact, the one through which we traveled and another about a thousand feet higher. The stormy condition sent the pilot down to a lower altitude, so low that we could see the house roofs of the beautifully kept farms and snugly built villages. Everything in Germany seems in perfect order, even the forests; one wonders if there would be an upheaval somewhere if one tree were found out of its row in the perfect phalanx of a German forest.

Although we were flying very low, so low that the stock in the fields were plainly frightened by the sound of the three motors and their propellers, and landing fields seemed circumscribed, we did not feel alarmed. The pilots know their business—there is a very definite confidence in Germany as to the reliability and skill of air pilots—and with the large and heavy wheels and landing gear, strong enough to break down an ordinary rail fence without damaging the airplane, we could make a safe landing. With the three motors this was not regarded as necessary. My thought at that time actually was: "Airplanes in Germany today are truly the most delightful means of transportation. There is no discomfort, no smoke,

no dust. In winter the planes are heated, and in summer the windows may be left open without inconvenience." At least, this is what I wrote in my notes, although why I thought of dustless flying and open windows when we were flying through the rain I cannot say.

Near Schweren is noticed a very pretty sight in fields of goldenrod, contrasting beautifully with the green grass. You see a wonderful castle, surrounded by water with only a bridge to connect it with the mainland. A few minutes later Lubeck was in sight and we coasted down and landed easily. This was typical of our flying over Germany.

In boarding an airplane in Germany you are given a folder in English, "Air-Travelling in Germany," which says:

"It is nonsensical to be afraid of flying! When the first railway was starting to carry passengers at a speed of about nine miles per hour, medical men testified that the celerity was injurious to health—the travellers would become insane! Twenty-five years ago a trip in a motor car was considered a risky adventure which called for a courageous man to undertake it! Today the trains are travelling at six times the speed or more but nobody has lost his mind yet on account of the enormous fastness. Many a business man on the other hand will become nervous when he notices, travelling by rail on urgent business,

an aeroplane easily outdistancing his train without any shocks, without any smoke, without any fear of collision."

The same circular states that airplane fares are the same as first-class railway fares, giving the following examples :

Between Berlin and Hamburg, about \$11.00.

Between Hamburg and Breslau, about \$21.00.

Between Berlin and Cologne, about \$17.00.

Between Cologne and Munich, about \$16.00.

Between Hamburg and Amsterdam, about \$15.00.

We found the airway fares about the same as the equivalent first-class railway fares, but the former included transportation between the airdrome and our hotel. We made the journey between Paris and Berlin, about six hundred fifty miles, in about one-third the time which would have been required on the railroad, and for fifty dollars each, which is just about the same as the first-class rail fare. First-class railroad fare, you know, is much higher in Europe than America.

Distances on the continental airlines may be better understood when compared with equal airline distances in the United States. The airline distance between New York and Boston is about that between London and Brussels or Frankfort and Zurich or Cologne and Baden-Baden. A route equivalent to that between New York and Pittsburgh would be the

route between London and Cologne. The London-Paris route is the same distance as that between Akron and Cincinnati. Our New York-San Francisco air mail routes may be compared with the London to Bagdad route, the section between Chicago and San Francisco being about equivalent to the routes between London and Constantinople. The route between Paris and Marseilles is about the same as a direct route between Chicago and Kansas City. That from Paris to Amsterdam is equivalent in distance to a route between Atlanta and Jacksonville. If a route were established between Los Angeles and Tulsa it would be the equivalent of the route from Berlin to Madrid. From Berlin to Vienna is about the same as a route between Akron and Memphis via Cincinnati. A route between Minneapolis and Tulsa via Kansas City would compare in distance with the airline between Berlin and London. The distance between Chicago and Detroit is about that between Hamburg and Amsterdam. From London to Amsterdam is approximately the airline distance between St. Louis and Memphis.

Another printed slip of information handed to prospective passengers is interesting:

"Special clothing is not necessary for air travel; the clothes that would be worn on a similar trip on the ground are adequate. Dizziness which may be experienced when looking down from the top of a

building is unknown in an airplane. A person is not at all affected by riding backward in a plane, as is sometimes the case in a railroad car. There is no restriction on moving freely about the cabin. Lavatory accommodations, drinking water and other conveniences are provided. Passengers are not to feel alarmed if the airplane is banked—tilted on one side—or if the pilot stops or slows down the motors or if the airplane is taxied right up to a corner before starting; these are all in the day's work."

Germany has made flying safe; it has gained leadership in commercial aviation which it will be difficult for any other nation to overtake; it has used the airplane to build up a new national unity; it has an understanding of the stimulating and transforming possibilities of air commerce which no other nation has, and it is pressing on to their utilization.

Germany has not yet made flying profitable, measured in terms of dividends from corporations in the class of U. S. Steel or General Motors. The Germans are still struggling with obdurate problems of "payload" and energy which await solution in the laboratories and testing fields. Nevertheless, flying is a business in Germany; the same intangibles which sluiced capital into early American railroads, long before they were profitable, is luring sagacious German marks into airlines.

Yet Herr Merkel has full confidence in the ultimate

permanence and profits of air commerce, and his is a confidence established from a wide practical experience. He likes to talk of the American development of railroad transportation, regarding which he is amazingly well informed. This is perhaps because the wide development of the American railroads has in the extent of territory covered some similarity to the modern pioneering in air transportation.

"I believe commercial aviation is established in Europe," he said, "otherwise I would not be here. We are yet in aviation's childhood stage, but we are demonstrating the reliability of air commerce. The solution of some of our technical questions will certainly provide great advancement. One of the first needs of the commercial aviation concerns was an all-the-year attitude of utilizing this new medium of commerce, and this today is the attitude of the German people towards air travel.

"The problem for America to work upon is, in my opinion, that of governmental and municipal cooperation with air transportation companies. The airdrome should be a publicly owned utility. This simplifies greatly the requisite public aids to air commerce, such as weather and radio services, enforcement of police regulations, lighting, and so on. In the starting of civil aviation in Germany the cities shared the losses where there were any. All airplanes are now started

and landed at German airdromes under police supervision.

"We have reached the points in safety and conveniences and in certainty of schedule that may be said to abolish the intangible factors of air commerce operation. We need advancement in power efficiency so that the relation of power to pay-load carried will be more satisfactory. Our next progress in commercial aviation will come through the laboratory and the testing work."

I was personally impressed with the advancement in efficiency noticeable as we flew over the twenty-three countries served by the Deutsche Luft Hansa airlines. We traveled in stormy weather, at night as well as by day, over long sea stretches in seaplanes, over mountainous territory, and all with a punctuality that rivals the best train service. It would take a lifetime to see in Europe what we saw in a summer on the Luft Hansa airlines. In fact, no one could ever see by ground travel the beauty of the Alps so quickly unrolled before the air traveler. Jacob Gould Schurman, our ambassador at Berlin, accustomed to spend his vacation in the Scandinavian countries, could not have seen in a summer what we were able to see there in a week of flying travel, in which we flew more than 3,000 miles around the Baltic.

And the Deutsche Luft Hansa company has undoubtedly succeeded in making air travel popular in

Europe. Every seat on all the principal lines is sold days and often weeks ahead. And a map of the air lines of this company looks like a streamer of red banners floating out from Berlin, touching almost every great city in Europe—London, Paris, Geneva, Vienna, Prague, Stockholm, Moscow, Copenhagen, Amsterdam, Königsberg, and scores of others.

The passengers on these planes are not limited to the rich and the curious; every sort of people are flying, from knitting hausfraus and commercial pickle drummers to captains of finance and international ambassadors. On the trip from Berlin to Cologne I had as seat mate at different times an Italian wine seller, a director of the company, a Jewish dealer in antiques, and for a while the American ambassador, Jacob Gould Schurman. Women travel by air regularly from Cologne to Dortmund to do their shopping, and at the airports one meets his friends and often has tea and bridge.

Of course a strong appeal to passengers is the elimination of boundaries and the swiftness of travel.

For those who fly, life has already been speeded up to an incredible degree. In one month I flew across twelve or more countries, yet was only half through my contemplated trip. One morning in midsummer I started on the wings of the morning at three o'clock from Berlin, saw the sun rise from a far horizon, crossed Poland, breakfasted in Danzig and was in

Konigsberg in time to deliver an early morning lecture at the University of Konigsberg, four hundred miles away and an all-day train trip. I felt no fatigue, but by any other means of travel the average traveler's physical strength would have been exhausted.

It is inconceivable to my mind that air transportation will be diverted to war purposes by the peoples of Europe. Rather will this new means of travel and interchange be the method of uniting nations which otherwise could never be brought together. President Wilson's dream of a League of Nations grows more real as we consider that we are forwarded to such union by the demands of science in this Air Age. The destruction of races may have a dramatic appeal to the youthful imagination, just as the utilization of aircraft may appeal to youth in connection with a world war, but the sober judgment of the older and more mature minds must bring understanding of the fruitlessness of such a course. It has required these new inventions of today to turn the minds of men from courses of destruction to those of production.

After riding more than twenty thousand miles in these swift, easy planes, and gossiping with German hausfraus flying to some neighboring city on an afternoon shopping tour, conversing in the air with German, French and Swiss business men, and watching the air line management in its cold preoccupation with

factors of profit and loss, I am convinced of two things: that aviation already is affecting the economic life of Germany so that it will make its own way as a paying business, now that the German people as a nation have taken to the air; also that regardless of its more remote purposes at the start, it has developed into an instrument of peace and progress, which will lessen, rather than augment, any military designs of the German nation. There is a priceless by-product of wider state and communal welfare in air commerce, which, in my opinion, will vastly lessen the chances of world conflict in years to come.

An ant, obviously, has a narrower world perspective than an eagle. I thought of this as we flew over the Ruhr from France into Germany. Viewed from aloft, the vast, interlocking industrial technical and transport systems of Europe give an impression of economic unity, obliterating political boundaries, which is unattainable from the ground. It is hard to keep in mind a clear concept of national entities in this swift passage over factories, mines, railroads, canals, forests and farms. I found other passengers who acknowledged the same thoughts. This is mentioned in view of what I believe to be the importance of aviation in bringing about a new world outlook among insular and highly nationalistic peoples. This was one of the most vivid impressions of my journey.

The social and economic changes, already observable as the result of aviation in Europe, are incalculable, and can only be suggested here. A scattering of small countries, with high tariff walls and latent hatreds and enmities, was one of the unhappy heritages of the Versailles Treaty. Fortunately these barriers are invisible from the skies, and the big, booming air liners go shuttling over them, weaving a pattern of new understanding, banishing insularity and prejudice, building up economic interdependence—surest safeguard against war—and fusing old antipathies in the unfailing solvent of daily business intercourse. This is the beginning of the realization of the immediate future—a barrierless Europe. I thought of this as I flew from Berlin through the pacific calm of a midsummer day, when in four hours I crossed the boundaries of four European countries. Air transportation is symbolic of the startling change which the social structure of the world has undergone in one generation, and is of importance as a peaceful instrument in world progress. The airplane of commerce is one of the indications that the politician is being succeeded by the scientist in making over boundaries and changing countries.

There have been two main impulsions to the development of aviation in Europe. One has been the newly attained commercial utility of aircraft and the

other its use in increasing and maintaining the unity of colonial empires of European countries.

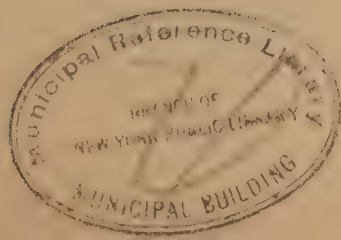
In France and England, the emphasis still is on the subsidized government routes to the colonies. As in Germany and other European countries, Italian bankers and financiers have now put their stamp of approval on flying and are investing in the new lines. The Imperial Airways are sending planes from the mother country to the farthest reaches of the Empire, with a shrewd realization that here is a providential means of keeping all her chickens under one wing.

Mussolini, in my opinion the most alert man in Europe, has announced that he is going to get every Italian into the air. Nero used to take about half a day to commute fourteen miles from his country villa at Anzio. Mussolini, who is a pilot and takes the wheel of his own plane, covers the twenty miles from his summer home at Nattuno to his office in Rome in about half an hour, including the drives to and from the flying fields. Italy, consequently, is fostering commercial and military aviation with all the resources at her command. The projected line from Milan to Munich, across the Alps, will be the most interesting and one of the best in Europe.

Seeing Europe from the sky—virtually all of it, for in our twenty-thousand-mile journey there were only four countries which we did not fly through or over—I have a profound conviction that aviation is essen-

tially an agency of peace and not of war. For example, a little French shopkeeper flew with us from Paris to Berlin. The next day I found him in a quaint little German cafe, laboriously trying to explain a French joke to the German wholesaler, with whom he was doing business. He finally got the point over, and they both laughed uproariously. I saw innumerable little incidents like this. In their bearing on great human and racial equations are they not more significant than all the evasive and disingenuous language of diplomacy?

All Europe is more or less alert to the tremendous significance of commercial aviation, but it has been left to the Deutsche Luft Hansa company to make it a practical business organization. And after all, the world moves forward, whether on wheels or on wings, propelled by that strong underlying motive, commercial success. America, the birthplace of the airplane, and as we fondly feel the home of success, can take a very profitable lesson from this intensive German organization. Not so much as a matter of rivalry, not so much, we hope, as a need for military self-defense, but purely from our love for the swift, colorful means of intercommunication; and for getting and keeping for our people the best there is on land or sea or in the air.



CHAPTER VIII.

AIR RAMBLING THROUGH EUROPE

Every person in the world has to some extent a love of real adventure, and everyone at some time acts upon the adventure impulse; whether in attending a Sunday-school picnic, buying a used car, climbing forty-nine high mountains or in searching for the North Pole, this must come out of all of us on occasions. And everyone has thought about flying as high adventure. Today, flying has been lifted out of the realm of hazardous adventure and placed in the classification of transportation, retaining all the thrills of our dreams but with the safety of a business.

It is now possible for anyone in Europe to have all the thrills of crossing the Atlantic by airplane except those thrills which anticipate smacking the water and trying to climb upon an iceberg. For a moderate sum, one may safely perform the oversea stunt, including some hours out of sight of any land, by taking scheduled aircraft trips around and across the Baltic Sea. It calls for very little imagination when flying on the section between Stettin and Kalmar to think that one is winging his way across the ocean. On other trips while circling the Baltic one sees land, especially islands, most of the time if the

weather is clear, interspersing marvelous scenery with the trans-oceanic thrill.

If you wish to parallel the adventure of the trans-oceanic aviator and still be sure of coming back to tell the home folks about it, here's an idea: Go to Berlin, where at three o'clock any morning, if you have been foresighted about your reservation, a Deutsche Luft Hansa airplane will sail away with you for Danzig and Königsberg and through Riga and Reval to Helsingfors, the metropolis of Finland. The Swedish airlines will then take you along the northern coast of the Baltic to Stockholm with vistas of so many thousands upon thousands of beautiful islands that you will find yourself inevitably writing a recipe for the Million Islands salad dressing, which is made by beating up archipelagoes into the clear, green sea water of the North and flavoring with a dash of fjords.

After you take in the sights of Stockholm the Deutsche Luft Hansa will have ready for you a Dornier-Wal "super-hydroplane," which is a true flying boat, to skirt the coast of Sweden, at times away from view of land, down to Kalmar and then directly across the Baltic to Stettin, where you may take a landplane to Berlin or fly to Copenhagen and Oslo.

This circling of the Baltic Sea is but one of many air tours on the regular schedules of the European

airlines. The Alps are offered to you in a wide panorama over countries in place of the circumscribed view by a climb up one peak, and to them are added the indescribable Swiss lakes. You may surmount the ranges and slide past the lakes of Switzerland one day and by the following evening be in Amsterdam, ready for the contrast of canals and flat country. Airway travel is spread over the continent of Europe and is rapidly linking Africa and Asia with the European capitals. One may fly from Stockholm to Madrid, from Helsingfors to Marseilles, from London to Moscow or Constantinople, if revolution does not intervene, or from Norway to Italy. More than one hundred thousand people travel via air about Europe in one year, and more would travel if the airlines had planes enough to carry them.

At present the tourist is not the principal traveler on the airlines. Most of the patrons are those who go for business or shopping and who find that air travel costs but little more than railroad tickets and saves a great deal of time. The American sightseer has considered air travel as an adventure rather than as an accepted development.

When we started on our air tour of Europe, my wife and I had the idea that flying from one city to another would be a great adventure. We planned to do considerable flying, not only for the enjoyment of flying but as well to be able to see so much more than

we could by train or boat. Our greatest anticipations did not come up to realization during the times we flew in four months abroad. For some time afterward, even when talking with experienced travelers, we could not realize how much more of Europe we had seen in that time than many Americans see in several seasons abroad. The wide-eyed astonishment of a friend who had lived in Europe when we spoke of going from Geneva to Amsterdam in a day, and of leaving Berlin in the morning and arriving at Königsberg at eight o'clock the same morning after breakfast at Danzig, and of flying between Stockholm and Berlin between half after eight in the morning and five-fifteen in the afternoon, made us wake up to the fact that we had been taking flying as a matter of course. We shall never again be content to go anywhere in Europe by train.

We flew a circle around the Baltic Sea, made another circle about Europe, touching the red fringe of trouble along the eastern edge, saw nearly all the capitals, at times hopped over four or five countries in one day, traversed the entire western front of the World War, followed the winding ribbons of great rivers, and were able to get a comprehensive view of the places of interest of a city before visiting them as groundlings. And at that, we had time to see the monuments or the churches or the art galleries or what you would.

We thought we had real adventure when we turned back from the trouble in Russia and sought calm in Vienna, only to drop into three days of revolt. After that the Alps, majestic as they are to the air traveler, seemed placid and cool and calm, and Holland was just smothered in peace and quiet. There were times, of course, when we flew over fog or were in rain and missed our views of the ground or water or found them intermittent. Sometimes we were held back by untoward weather and had more time for sightseeing, but these were incidental delays and usually because of dense fog. The red flare-up of revolution seems to be the only thing that will really stop an airline in Europe nowadays.

We had no airsickness, and it does not occur with anything like the frequency of seasickness aboard steamships. There are "air bumps" between Paris and Berlin, but I never have experienced in the air that feeling of the approach of death that *mal de mer* gives one on the channel boat between England and France. In contrast to flying over land is the smoother air travel over water. When flying from Sweden to Germany we were traveling at one hundred miles an hour about thirty feet above the water; then you know you are traveling! Ocean liners seem snail-like, and the fastest motor boat cannot give the thrill that the flying boat traveling just off the water will furnish.

We took the Baltic circle in three sections, traveling around the eastern end by flying to Danzig and then to Helsingfors on the Gulf of Finland, taking a hydroplane over the northern coast to Stockholm, then down to Kalmar and back to Germany, although one may go by Malmo and Copenhagen. One may reverse this and travel from London or Paris via Amsterdam to Copenhagen, and then to Stettin and up to Stockholm and eastward to Helsingfors and then down to Berlin, and then start a circle of Europe. It is possible to fly between Stettin and Danzig or between Danzig and Kalmar.

We left Berlin in the very early morning with the guiding lights of the airline blinking up at us through a layer of fog, but as we went eastward it was not long before we saw evidence of dawn. As the sun pushed its way upward through the fog it seemed like a great glass ball of fire. With the fog below it was an impressive sight, worth sitting up all night to be sure of getting the early morning plane. At first we could see nothing but fog. It was like a glimpse of a snowy winter. Soon a church spire in one direction and another several miles away indicated two cities. I could not tell where we were, but the radio operator knew. When we crossed into Poland he told us, emphasizing "German Poland" so that we knew beyond question what he felt about it.

We were at Danzig before six o'clock and then

went along the Baltic shore to Konigsberg. If you try to take photographs at Danzig or in Poland, your camera will be confiscated. I had an address to deliver at the university, and after that we were in the air again along the eastern shore of the Baltic Sea to Riga, nestling at the southern end of the Gulf of Riga. We flew along this gulf and across Esthonia to Reval on the coast of the Gulf of Finland, then across the gulf to Helsingfors, flying not far from Leningrad on the way. We could not stop at Leningrad, for it was barred to all foreigners. August is a good month to make this flight, but the airplanes also fly in winter, when they are equipped with skis.

Helsingfors, which the Finnish folk call Helsinki, is a city of about two hundred thousand people, and is the business center of Finland. It has several places to see, including the president's palace, a museum, statuary; there are several hotels, among them an American hotel which knows not the Volstead Act. The city, however, is not Finland's deep joy for the tourist. There are forty thousand lakes in Finland, and these, with the great archipelago, constitute the country's scenic pride. You will very soon cease counting islands and lakes when you fly over part of Finland and fall back upon sheer enjoyment of the country.

We had fog as we flew away from Helsingfors toward Stockholm, but the radio reports promised

clear weather ahead. The fog banks drifted inland according to prediction, and as we flew close to the water we could admire the islands that fringed the shore. The beauty of these islands and of the inlets of the shore line is not to be described. After three hours out of Helsingfors we turned inland, and had the novel experience of flying over land in a hydroplane built only for alighting upon water. This was to reach Abo, or, in Finnish, Turku, a city of sixty thousand people, where we stopped for an hour for some overhaul on the motor. We went on at six o'clock in the early afternoon, as I wanted to call it, for we were in the Northern day of light late into the evening. More islands entranced us as we flew on.

At seven o'clock we overtook a heavy rainstorm, but in a cabined airplane this is not bothersome. We climbed steadily as we came toward Stockholm to gain the altitude necessary to fly over land again. There were estuaries everywhere, so the hydroplane could have come down without trouble if this had been necessary. The view of the harbor of Stockholm was very beautiful, with ships here and there and Sweden's navy at anchor. The hydroplane swung around and was soon down and taxied into the Lindarängen air harbor, but a quarter of a mile from the center of Stockholm. We made the flight in four hours, including an hour's delay at Abo. The fastest

steamer requires twenty-two hours between Helsingfors and Stockholm; this difference is a good indication of time saving by the airplane in the Baltic countries.

CHAPTER IX.

CROSSING THE BALTIC BY AIR

There is much to see at Stockholm, but before long we were on our way down the Swedish coast and winging our air voyage directly across the Baltic Sea, after a luncheon call at Kalmar, to the northern coast of Germany and on to Berlin. At Stockholm, or at Stettin if northbound, one boards a three-motored Dornier-Wal, a rakish-appearing boat with monoplane wing and pontoons and a very comfortable cabin. We left the hotel at eight o'clock in the morning and were soon flying over the harbor and clinging to an altitude of two thousand five hundred feet. The river widened and then seemed to form one lake after another, and then land appeared only as many small islands, indicating that we were reaching the open sea. As we came over the sea we coasted downward so that we were flying at first at one hundred feet above the water and then at thirty feet.

The motors sounded very much like the beats of engines on an ocean liner, but we were traveling more than three times as fast as the speediest of the big trans-oceanic ships. We could see that the waves were running high, and we felt that we were more comfortable than we would have been on a steamship. Our course was down the Swedish coast, but not in

sight of land save now and then when a lone island would stick its rocky contour up from the water. Without looking for a traffic signal, but assuming the right of way, a flight of ducks went across our bow at their fastest speed. At one time the sun tried to break through the clouds, but the sky became overcast and we flew into and out of a rainstorm.

We veered in toward noon and flew between the long island of Oland and the mainland for a stop of thirty minutes at Kalmar. The airboat taxied up to a platform—perhaps it may be called a “flying-boat landing”—and we went ashore to a restaurant for an excellent luncheon. Then we were away again, this time to take leave of Sweden for the flight across the sea to Germany. We had about three hours of oversea experience with no land in sight, but, unlike the ocean-crossing aviator, we felt sure of a warm dinner and a night’s sleep in a good hotel, for at 17.15 o’clock that afternoon, by the German time, we would be sliding into the Tempelhof airdrome at Berlin.

When we saw land again it was the strand between the sea and the harbor of Stettin. The pilot directed the ship upward and we went along the harbor at an altitude of one thousand feet. We knew we were in Germany, for on the land we could see the red-roofed houses, and before long busy factories were visible. We passed by steamers and boats of all kinds in the

harbor. At first there were farms on either side on the land, and men at work stopped to wave up at us, but soon we came past the smokestacks and alighted at Stettin. We went across the city to the airfield where the Berlin plane awaited us, riding in a large Mercedes car of the type that one finds at every Luft Hansa airport. It carried the company's flag on the radiator cap, and seemed to catch the speed habit, for we dashed through the city streets at high speed and without attention from the police.

In an hour and ten minutes we were in Berlin in time for dinner, back again in a few days after encircling the Baltic Sea. We had seen a great deal more than ordinary touring would have given us in that part of the world in an entire summer, and included wonderful views that no ground travel could have revealed. Transportation by ground or water lines is necessarily slow in Sweden and Norway and to Finland and Esthonia, for many water obstacles make railroads all but impossible. The airline schedule in these Northern countries frequently offers arrival at seven times the speed of any other available means of transportation.

In time the airways must add scenic flights and tours by seaplane or airplane over Finland and up the Gulf of Bothnia and across Scandinavia, for here the scenery and the hunting and fishing are wonderfully alluring. Sightseeing by airplane is a probable

adjunct of commercial airlines, and in the near future the continental tourist will be invited to see the Alps in three hours with a sparkling measure of lakes thrown in, or to take a choice of several one-day tours among the old cities of Germany or to see the Arctic Circle and play the game of counting lakes in the Scandinavian countries.

At present the airway companies are concerned in Europe with more serious projects than sightseeing. They have found the demand for their service and are building larger and more luxurious craft, equipping sleeperplanes and parlorplanes with a capacity each of twenty-four to twenty-eight passengers. They are flinging out their airways to make them inter-continental instead of merely international. The French are already flying on schedule down the African coast to Dakar, and the French Minister of Commerce has officially stated that French airplanes will be in commercial operation to South American cities as an extension of the Bordeaux-Toulouse airline as early as the line can be established. The Deutsche Luft Hansa system has also been at work planning the South American extension with its airplanes, and the Zeppelin concern has already announced the rate for booking passengers on the first dirigible airship voyage from Europe to South America. The first establishment of this trans-oceanic airline is a race between the German and the French airways, while

Great Britain is pushing her air system down to India and Australia. The Germans are also definitely projecting the airway to China and Japan.

If the rest of the world will sit by and give these three nations time enough they will be encircling the globe just as they now crisscross Europe and dip into Asia and Africa. It is worthy of note that the urge of French and English lines is that of the strategic connection with colonies or dominions with the homeland, while the basic operation of the German system is that of commerce. This is evidenced in many ways to the investigator of the German aero operation. It is especially significant, therefore, that the Germans, having proven air commerce in Europe, are not discontented, but are eager to go into other continents with their air transportation business.

In the meantime they have made it possible to find a new comprehension of Europe, for air touring does not turn blase the desire to visit art galleries and cathedrals and other places of interest—quite the contrary. It sharpens the sense of touring, and instead of being satiated you are appreciative of the wider opportunities. When you motor from the airport to your hotel you become groundlings once more and do the sights as many thousands of groundlings have done, but when you fly again you add to the tourists' sightseeing the magnificent outlooks and comprehensive views that only those of the air can understand.

However, an important feature of our air touring was our ability to include visits to many worthwhile places which could not be included in any other tour. Leipzig, with its nine hundred years of history, its reminders of decisive battles and reminders of great masters of music, was possible on an air tour, but would not have been reached otherwise.

Name your favorite European capital — London, Paris, Berlin, Rome, Vienna, Madrid, Bern, The Hague, Oslo, Stockholm, Moscow, Brussels — and you may go to it on wings in a matter of hours or you may take in two or three in a day if you have the passports. In the time that one has done five or six principal cities of Europe by the old ways of travel, you can encircle Europe by air and see what there is to see. The most objectionable phase of this air touring is in going back to the railroad, when you find yourself fretting at the slowness and missing the wide view of country.

We enjoyed especially the flights along the great rivers, up the Danube and down the Rhine and the Rhone and along the Elbe and across the Seine and the Meuse and innumerable others. The traveler who takes a river boat misses entirely the real effect of a great river upon man's progress. With an airplane you can take a river and follow it to the sea—you can see where it helps and where it devastates, how it carries shipping and how it forms harbors. And

you know why that river is where it is. You see the mountains it winds around, the gorges it tumbles down, the valleys it enriches, the power it furnishes and the industry and agriculture it encourages. You grow friendly with the river you fly along, and you never forget what you see of it and around it. If I were to become a collector of anything I would be a riologist, which is my best California Spanish for collector of rivers, but I would do all my hunting from an airplane and my shooting with a camera.

If Strauss had viewed the beautiful blue Danube from the air he would have written a whole book of marvelous waltzes on that theme. There is an inspiration in watching the winding rivers and their entrancing scenery. The mountains, of course, are fascinating, especially the majestic peaks of the Alps, but they cannot be so closely associated with the affairs of men as are the rivers. Forests of Europe, especially the German forests, seem to have been put in order and made to stand in rows, and one wonders if the ancient militarists of old Europe insisted on this before they went out to do their daily dozen of warfare. When traveling by airliner one sees the Black Forest as a forest, but the Rhine winds on and on after the forest is lost to sight.

The course of the Elbe through Bohemia is delightful, and the flight from Dresden to Prague offers a beautiful panorama with the deep shade of

the trees reflected in the placid water of the river, the thick stretches of forest, now and then giving way to well-kept fields and the innumerable small villages and larger towns, all making so interesting a journey that I forgot to make notes.

It was like this along the Danube down to the bathing beaches with thousands of bathers at Vienna, but the Rhine after it left the Black Forest spelled industry with great smokestacks, clusters of factories and forges and the ribboning together of many cities. It must be confessed that the Danube is not a beautiful blue, but is a murky brown, a muddy river. The clear, sparkling river is the Rhone, which is a deep green and a very attractive river to the air traveler.

Mountain peaks, of course, and many lakes, were the scenic points in Switzerland. From Lake Constance to Lake Geneva the country is filled with mountains and lakes. The joy of air jaunting in Switzerland, however, is lessened by the rigidity and limited vision of operation of the Swiss airline. The Swiss may be wonderful watchmakers and mountain guides, but their country is too small for independent airway operation. They insist that in Switzerland one must travel on Swiss airplanes, but they cannot provide the equipment and standard of service that will accrue through wider operation. The comparison of Swiss airline operation with the high standard of the great Deutsche Luft Hansa system is marked. I wondered

if the limited view of the Swiss, hemmed in by mountains as they are, was not the reason for their restricted ideas about air commerce. In time, I believe the big airlines will shoot by Switzerland and not trouble about the connections for the local service of that country. In spite of the Swiss attitude this is an entrancing part of Europe.

We went into Switzerland out of a sullen and rioting Vienna, watching as we flew away the smoking ruins of the Palace of Justice and the milling, rebellious crowds in the streets below. The elements seemed to turn sullen, too, for we flew out of Austria in sheets of rain, and on our right there were fiery paths of lightning. We had flown enough to be confident that the Luft Hansa pilot, well trained for all these emergencies, would keep on if it were safe to do so or would land safely if he knew that the proper thing to do. When one has this confidence in the pilot it is a wonderful thing to watch a storm in the air. We could see only the dim outline of the Alps on this journey because of the storm, which continued after we left Munich and until we reached Stuttgart.

We turned southward at Stuttgart and flew for Zurich, passing over successions of mountains and valleys, red-roofed houses, cathedral spires, ribboned rivers and more mountains. We passed over Tuttlingen, which seemed much larger than its accredited population of fifteen thousand. In the distance we

saw the beautiful Lake Constance, the "Bodensee," scene of Count Zeppelin's experimental years.

Beyond the Swiss border we went over Winterthur, a city of about thirty thousand inhabitants, and we knew we would soon be at Zurich. The Lake of Zurich quickly unrolled before us, and we glided down to the landing at Zurich after a very quick trip over a great deal of exceedingly beautiful scenery.

CHAPTER X.

WELL-TRAVELED AIRLANES

The flight northward from Zurich to Amsterdam, the big jump from the high mountains to the low lowlands, is a day's incident to the air tourist, but it is one of the most beautiful in Europe. One leaves Switzerland and flies over to the valley of the Rhine and then down to Basel and past Freiburg, Strassburg, Mannheim and on to Cologne, or strikes across Luxemburg to Brussels, Antwerp and Amsterdam.

Canals and windmills, cattle and green fields, very compact cities and fairy villages, mark Holland. With Dr. Herman von Raumer, the Luft Hansa director at Amsterdam, and his wife, we drove to Volendam, the quaint picture-card town with the genuine costumes of Holland and the quaint Dutch babies who grow into such good citizens. We were invited to see the cheese markets, a Dutch cheese farm and the "dead city" of Edam, but we have plenty of good cheeses in California, and my recollection of cheese is that the longer it waits the better it is, so we passed them over and flew on to other things.

We left Amsterdam for London. As we passed over Ostend and the other beach resorts the crowds waved to us. After passing Calais we "flew the channel" in twenty-five minutes; it was a clear day

and the chalky cliffs on both sides of Folkestone were soon passed and we were headed for Croydon airport. We confined our stay to London, for England is too foggy to fly over, and the tourist in the British Isles must stick to the fog-piercing railroad and omnibus.

From London we motored back to Croydon and embarked on another circle of Europe. We took the de luxe plane of the Imperial Airways, which carries parlor car comforts back and forth over the English Channel and makes the air trip between London and Paris in two and one-half hours as compared with seven and one-half hours by the old way of train, boat and train.

When we were ready to leave Paris we were at Le Bourget airport promptly, for the Luft Hansa airplanes move on exact schedule from any terminal. There was a brief delay as a German protested the reception of an American passport by mistake. It is typical of German good-nature that he laughed when I suggested that he need not be alarmed, since we are making good Americans out of Germans almost daily in my country.

With us on the flight into Germany was Herr Wronsky, the representative of the Deutsche Luft Hansa corporation at Paris, an expert on air traffic and thoroughly alive to the future in air commerce. He is the son of Herr Martin Wronsky, one of the three executive directors of the Deutsche Luft Hansa

corporation. I asked him for an opinion on air travel, and I got it, an opinion that hit me squarely.

"All Americans travel with entirely too much baggage," Herr Wronsky assured me in a very pleasant manner. He was insistent upon the importance of not carrying excess baggage, although the company collects good and sufficient penalty from those who do.

"How much baggage have you?" he asked me. When I confessed excess goods for a charge of three hundred francs he said "Ah!"

That was all, but one syllable was enough with what Herr Wronsky put into it. It conveyed all that might be put into a speech of ten minutes on Americans and their luggage, and as Herr Wronsky is an expert among the experts I resolved to give my baggage immediate lessons in reducing.

Herr Wronsky obligingly secured an air map for me, but I did not need it to know that the route was somewhat "bumpy." Rough air riding does occur now and then, especially when clouds on the route are breaking up and the plane is passing from cloud-banks to clear weather. We had a trial of this between Paris and the Aisne.

We crossed the Aisne between Laon and Rheims. Herr Wronsky looked down at the ground and showed me where his father's headquarters were in the war. His pride was evident, but it was family pride in his father and not military conceit.

We went over Fumay and into Belgium and had more air bumps. At Givet we noticed the beautifully palisaded banks of the river Meuse, which is very winding as it struggles out of France. We passed Liege and the cities surrounding it, and were quickly over Aix-la-Chappelle.

"Congratulate me," said Herr Wronsky with German pride of country as we passed the border. "You are now under German law."

At Essen our ambassador at Berlin, Mr. Jacob Gould Schurmann, got aboard on his way back to the German capital. At Schoppenstedt, in Brunswick, we noted the red-roofed houses so typical of Germany, and soon afterward we were at Magdeburg, sliding over the river Elbe, where we saw below us a tug drawing enough barges to make it look like a railroad train. Then came Brandenburg and the lakes of the Havel, Potsdam and its palaces, and then a graceful landing on time to the minute at the Tempelhof air-drome.

Tempelhof airport is the world's show place of aviation, and the reception of passengers there is in keeping with the magnitude of the place. It was so impressive that I wondered if they took me for the Prince of Wales, although I do not look at all like him and he looks even less like me. A smartly uniformed boy opened the cabin door and saluted. Attendants in uniform had us and our luggage unloaded

with surprising rapidity, and there was a wonderful town car in which it was indicated that we were to ride to our hotel. Everything was done efficiently and rapidly and smoothly, and with great politeness.

I had new conceptions of Paris and Berlin as I flew into them, for I saw the cities as a whole before I descended to go about the streets. My most startling reconception, however, was of Rome. From the air it is not envisioned as the historic city, the city of a past grandeur, so much as a great and modern metropolis, a center of business and commerce. This rather jolted me, for I had been thinking of history as made and I saw a Rome evidently about to make much new history. I had the pleasure of an interview with Benito Mussolini, and my impression was very decided when I came away that he is where he is because he typifies more than any other in Italy the new ambition of the Italians and especially of the Romans.

This remaking of my viewpoint on Rome is somewhat typical of what air-viewing does for one. It gives a complete idea of a city as no ground wandering can ever do, and it reveals, as it revealed the new and greater Rome to me, the real purpose and plan, or lack of plan, of a city.

In addition to new conceptions and new ability to see so many additional sights by taking the air routes, this method of travel seems to heighten one's desire

to explore and find the places and objects worth seeing. In the five or six times I have visited Paris I had never taken the trouble to go the very short distance from my hotel to visit the Louvre, although I had started for Europe every time with full intention of doing so. After I had flown around a bit I had a sightseeing vigor that took me to the Louvre without question when we came into Paris by Le Bourget. Before we flew back to London I had been content to talk about the sights of London on the basis of what the guidebook says and to dig up the old classic reply of "No, and neither have you," to the Londoner who queried, "I say, have you seen the Tower of London?" I had talked semi-learnedly of the famous papyrus of Ptolemy the Second, known to scholars as the oldest specimen of what may be called writing, but I did not go to the British Museum to see what it is like until my tourist energy had been whetted by flying about Europe.

Perhaps it is because air travel brings a firsthand realization that there are so many things to see that one goes to see them as a matter of course. It is very evident to the air traveler that there are many things to see which he did not dream of seeing until he began to go via air. The sweeps of view, conceptions of historic ground, realizations of what is really characteristic of a country or a city, inspire, but are entirely lacking in ground travel.

The cost of seeing Europe by the airways is not excessive. Rates of the Deutsche Luft Hansa system are about the same as first-class railroad charges. One may take a sightseeing air journey of two thousand miles for about five hundred dollars. A traveler who contemplates touring in Europe may plan air tours that would give in one summer the equivalent of two seasons abroad if he were to spend his time railroading about the continent. The outlook and sightseeing would be greater via air, and the cost would be less than two seasons abroad as against one lesser season as a ground-viewer.

The air traveler does not need to take special care to be prepared for flying in Europe. The main preparation is in reduction of amount of one's luggage to avoid excess charges, and this is not difficult when one gets in the habit. The airlines allow from thirty to sixty kilograms of baggage per person; above that excess charges necessarily mount, as airplane space and cubic capacity are limited. One may travel very comfortably with only a steamer suitcase, and it is very easy to become accustomed to light impedimenta. Herr Wronsky's idea that Americans are lavish about baggage is a true indictment. When one acquires the air habit he wonders why he insisted formerly in taking so much luggage about with him.

European airplanes are all cabin-built, and ordinary clothing such as would be worn on a correspond-

ing journey on the ground is suitable for an air journey. A great deal of enjoyment will be added to air travel if one secures the air maps provided by the airlines and studies the cities to be passed over, the rivers and other points of interest, and especially the historic places, battlefields, famous castles, plazas and other municipal views.

A study of the places of great interest not ordinarily available through pressure of time, but which will be feasible to add to the itinerary because of air touring, will lead the traveler into really delightful additions to his itinerary. There are many places not on the regulation tours which are more interesting than places always included and much better known, but which have been forbidden by the time element. The officers and representatives of the European airways will help the traveler include these interesting places when planning his trips. European cities, especially those in Germany, are now issuing brochures about their attractions that have all the tang and allure attributed to an American chamber of commerce circular.

It will be found most interesting to make notes of one's impressions and sights while flying and to write these out more fully in the evening after a day's trip or on the steamer going back to America. The novelty of an air journey seems to give fresh impressions and thereby a greater enjoyment than is avail-

able by slower means of travel. A comparison of what you anticipated with what you really see on a flight will later be amusing and instructive when you face the inevitable home queries about your experiences in Europe.

Air touring in Europe today is comfortable and dependable, but it is progressing to a much greater business than the best informed men thought of it two years ago. The airplanes of 1930 are far better than those of two years ago, and this improvement will continue. The airplane of tomorrow will carry more than one hundred passengers and make commonplace the experiments of today. Great comfort and luxury of travel, lower rates and faster time are assured in future airway development; and the extent of travel will broaden as fast as the demand. In Europe it has been proved that there is a very definite demand for air commerce. This has been shown by the bookings in advance of flying.

The great fault of the American who travels abroad is that of unpreparedness for what he is to see. He does not prepare himself in advance, and so he misses a very great deal. It is true that "he who would bring home the wealth of the Indies must take the wealth of the Indies with him." Many of our tourists abroad see Europe without seeing anything; this is very evident to an experienced traveler as he meets tourists. The man or woman who knows how

to travel acquires information in advance of the trip and knows what to look for and how to see it. If air travel will accomplish anything for the tourist it is likely to inspire him through its speed with a desire to know where he is flying and what he is flying over. This will lead to a more studious attitude toward the features of the tour. It is very easy to obtain the details of sightseeing, and it is very well worthwhile to give the time to a posting of one's self on main points of interest on the route and of the places to be visited.

There is a knack in air touring just as in accomplishing anything else, and when you get into the swing of it you find decidedly that you have acquired something more than just an experience.

CHAPTER XI.

FRANCE, A GREAT AIR POWER

On May 21st, 1927, my wife and I sailed on the *Leviathan* for Cherbourg. The day before an unknown airmail pilot, Charles A. Lindbergh, started for France from Long Island. He had aroused the interest of aviation enthusiasts by first making a trip across the continent, stopping on the way only at St. Louis long enough to confer with the backers of his projected trans-Atlantic flight, then leaving New York on the wings of the morning and nosing his plane into the wind to head for Paris.

Just before he left California we had dinner together; I asked him to say hello to Harry Knight at St. Louis, and I wished him luck on his journey. I don't know just why the boy inspired faith, but there was something in his quiet determination that made me feel that he knew what he was about. So, in parting, I spoke also about my contemplated trip to Paris and said, "We will have dinner the next time in Paris, old man." To this he made ready assent, not realizing that when he climbed from his cockpit at Le Bourget he would become the idol of the French people and in turn of other nations, and that his own country would have to vie with foreign countries in

according him a welcome on his return to the United States.

The Leviathan was at sea hardly an hour when the captain handed me a message he had just received, stating that Lindbergh had reached his destination.

Today the United States is capitalizing on what Lindbergh did. Aviation needed only the confidence of the public. When that confidence once obtains, our people, with their natural quickness, will become fully air-minded and realize that our long stretches of country lend themselves better to aviation than to any other form of transportation.

What was the reason that Lindbergh's epic flight to France and his arrival there on May 21st, 1927, created such a furore about aviation in a nation which was then the undisputed master of the air from a military standpoint and had been ever since the conclusion of the world war? It was this: No nation will show enthusiasm over the mass formation of military planes for military purposes, whether for attack or defense. Behind military airplanes is the fear thought that they will be used for purposes of destruction. This is notwithstanding the fact that for defense they are a necessity under new methods of warfare and for attack they are absolutely indispensable at this time and will become increasingly so in the immediate future, perhaps to such an extent that they, with other forms of aircraft, will supplant

every other known method or instrument of warfare.

Lindbergh's flight brought, however, to a nation an immediate response of joy and hope because it pictured instantly to their minds the romance that lies back of the airplane in transportation.

He was not the first man to cross the Atlantic. Why was so little attention paid to the outstanding feat of Alcock and Brown as early as 1919, that of the NC-4 that same year; or the crossings by the two dirigible airships, one British and one German, each with its complement of more than thirty persons? Why was so little attention paid to the successful crossing and world tour, 36,000 miles in all, of Dieudonne Costes and Joseph Lebrix?

Lindbergh's individual success, his boyish optimism and enthusiasm, his unfailing grit, his innate modesty captured the imagination of the French people. They were depressed and in the depths of despair following the loss at sea of their own beloved Nungesser and Coli.

The first official act of Lindbergh following his arrival was a visit to the mother of Nungesser, followed by the placing of a wreath of flowers on the tomb of the unknown soldier; he paid tribute not merely as an individual but representing a nation's tribute to France's great flyers lost at sea and a nation's remembrance of the unknown heroes of the war. Lindbergh had not participated in the world

war, but he could represent the young manhood of America called now, not to the defense of our colors, but enlisted in transportation's epic advance toward speeding communications among cities and to accomplish the utilization of the airplane as an instrument of peace and progress, not of destructive warfare.

France in her commercial air development has been using built-over military airplanes for commercial purposes. She cannot successfully compete with Germany along this line. Germany's airplanes, since her restrictions were removed in 1923, represent the best that her barons of industry can put out, and passengers on her airlines are given every degree of comfort that money can buy.

Napoleon met his Waterloo early in the nineteenth century; France today faces a twentieth-century Waterloo in commercial aviation in that she has thus far built no commercial airplanes which can compete successfully with the great air transport planes of the Deutsche Luft Hansa now radiating from Berlin to every other European capital and into numerous other foreign countries.

The great welcome accorded Lindbergh in France was due to the fact that the French people were imaginatively ready to be lifted up from the depths of despair occasioned by the loss of Nungesser and Coli, ready to be lifted into the new realms of air transportation. Their minds ceased to center around

airplanes in terms of war; their thought was transferred to airplanes as engines of commerce, as trail blazers of progress and as pioneers of peace.

The French people gave to Lindbergh honor even as great as that which they gave to their own men, Costes and Lebrix, upon their return from an equally eventful journey. These two heroes of the air had flown across the Mediterranean, over the Atlas Mountains and above the wastes of the Sahara desert. They had skimmed the treetops of African jungles. They had hurled themselves across the watery expanse of the South Atlantic from Dakar in French Africa to Pernambuco in Brazil. They had flown high above the llanos of Brazil, the pampas of the Argentine Republic, high over the Cordilleras, and had looked down on the Pacific as Balboa had done and perhaps with the same emotions of discovery. They followed the backbones of the two American continents, crossed the Gulf of Mexico, winged over the coast line of the United States to land outside the canyons of the mountainous skyscrapers of New York. In a week's time they traveled from Tokyo on their return to Paris.

What was this flight? It signified the preliminary survey for French trans-Atlantic lines which will bring South American countries as close to Paris as the European capitals are now connected with each other. The French Chamber of Deputies did not

vote a subsidy of 120,000,000 francs for trans-Atlantic flight extension in any idle or transient mood or for purely tourist flying.

At present the airway companies are concerned in Europe with more serious projects than sightseeing. They have found the demand for their service and are building larger and more luxurious aircraft, equipping sleeperplanes and parlorplanes with a capacity of twenty-four to twenty-eight passengers to an airplane. They are flinging out their airways to make them intercontinental instead of international only.

The French are already flying on schedule to connect their own cities with Dakar on the African coast, and the French Minister of Commerce has officially stated that French airplanes will be in commercial operation to South American cities as an extension of the Toulouse-Bordeaux airline as quickly as this trans-oceanic extension can be put into operation.

This is not without competition. The Deutsche Luft Hansa system has also been at work planning the South American extension with its airplanes. A Spanish Zeppelin concern is already taking bookings for the first dirigible airship voyage from Europe to South America in the luxuriously equipped LZ-127 and will receive large subsidies from Spain and the

Argentine Republic for regular service between these countries.

The first establishment of this trans-oceanic airline is a race between the French and the German airways. The Germans are not allowing this to delay their definite projection of their airway to connect Berlin with Shanghai and Tokyo. In the meantime Great Britain is pushing her airline system down to India and Australia and is definitely announcing an airship service between London and Montreal and New York.

If the rest of the world will sit by and give these three nations time enough, they will be encircling the globe just as they now crisscross Europe and dip into Africa and Asia. The English are thoroughly confident that their large airships will make regular schedules across the Atlantic. The German Graf Zeppelin has a non-stop flight range of halfway around the earth.

It is worthy of note that the urge of French and British lines is that of strategic connection with colonies or dominions with the homeland, while the basic operation of the German system is that of commerce. This is evidenced in many ways to the investigator of the German aero operations. It is especially significant, therefore, that the Germans, having proved out air commerce in Europe, are not at all discouraged, but on the contrary are eager to go into other continents with their air transportation business.

One of my most vivid impressions in flying over Europe—and I found other passengers acknowledging the same thought—was the difficulty in keeping in mind a clear concept of national entities in the swift passage over factories, communities, railroads, canals, forests and farms. Viewed from aloft the vast interlocking industrial, technical and transport systems of Europe give an impression of economic unity, obliterating political boundaries, an impression vivid enough from the air but unattainable on the ground.

I believe this illustrates the importance of aviation in bringing about a new world outlook among insular and highly nationalistic peoples.

CHAPTER XII.

SEEING MORE OF ENGLAND

Flying from Berlin to London a few summers ago, we stopped off at Amsterdam to witness the arrival of a Fokker airplane which had carried Mr. Van Lear Black, editor of the Baltimore Sun, on a business trip to the Dutch East Indies and in which he was returning that afternoon. Nearly all Amsterdam was at the field to greet him and his pilot, who, by the way, was accounted one of the best in the Dutch service.

I ran into Air Vice-Marshal Sir Sefton Brancker, Chief of Civil Aviation for Great Britain. I had met Brancker just after the war, and we have since renewed our acquaintance on many occasions. He asked what brought us to Europe. I told him that I had been attending the Geneva Disarmament Conference, and finding time hanging heavily on my hands, had gone to Germany to make an investigation as to commercial aviation. I indicated also that I would like to know something about "Imperial Airways," and he extended a warm invitation to fly over with him that afternoon.

"You must not go back," he said, "until we have a visit together." This we did at a dinner which he gave for us at the Royal Air Force Club in London.

Among those whom he had invited to meet us were the Chief of the Turkish Air Force, his aide and a number of distinguished officers of the British Air Force.

After the Armistice, Benedict Crowell, Assistant Secretary of War, headed a mission to Europe and reported in favor of a unified air service. The very thought shocked the war and navy departments and the Crowell report was not made public. No doubt he thought it would never do to let our American public know how far superior European nations were to us in the air, or perhaps there was entirely too much hot air in Congress about that time, and it would not have been good policy to "air" the superior merits of European aircraft. In 1923, however, the ban was removed. Along came Billy Mitchell, and the lid blew off with the result that America now is well on the way to commercial air supremacy.

There are many advantages to air travel through Europe. I know that on my first trips to Europe I got but a superficial picture of London, or any other European city under the guidance or guest of a steamship company. My first trip to Europe was even under more restricted conditions as a representative of our War Department on official business.

Take, for instance, the principal points of interest in London, which are, of course, the Tower of London, the British Museum and Westminster Abbey.

There is a certain fascination about the historic Tower of London, the Museum and the Abbey. We had ample time flying from city to city to stop and see the art galleries and museums of the European capitals, and we felt very "toppy," so to speak, when we left England congratulating ourselves upon having viewed these three places. In fact, everyone asks you if you saw them. When a Londoner asks the question, however, "'ave you seen the Tower of London?" the answer, of course, is "No, and neither have you," and everyone goes away satisfied.

I have been in London on many occasions, and yet before my last trip I realized I had never really been there at all. London to me before then was just a jumble of things I had read and heard and imagined since I was a youngster. It represented the kind of things that would naturally appeal to a youngster's imagination. On this last trip the sun was shining brightly as we circled the airport at Croyden, wafted our way at the close of a late midsummer day on the giant wings of a Luft Hansa plane, and our wheels came slowly to rest and taxied up to its hangar. We were nearing the end of our air journey through Europe. Just one long flight through Spain, across the Mediterranean into the heart of Africa, returning then to Paris, and we would be headed for the States again. So for a week or more we were going to be "groundlings," and enjoy the real London. Then

followed Vauxhall and Fleet Street, the Cheshire Cheese, the Tower, the Museum, the Abbey, London Bridge and Kensington Gardens. We could even imagine the two little princes on the stone steps of the Tower in their velvet suits. We pictured again Sir Walter Raleigh and Lady Jane Grey, and countless other things of which the Tower is reminiscent.

And when the wheels of our plane—this time the *de luxe* "Silver Wing" of the Imperial Airways—lifted us up again into the air, heading for Paris, I knew we had gone up to London by the right road, and had really seen London Tower.

Fog was hanging quite low over London during the latter part of July, 1927, when the King's Cup race was held, and also during the "Air Raid Maneuvers" over London, both of which we were fortunate enough to observe. I had previously attended the King's Cup races with General Brancker, but this time the occasion was marred by the death of Captain F. L. Barnard, one of Britain's most famous airmen. He was killed near Bristol while flying in a Bristol-Bodmington plane, in which he was to have participated in the King's Cup race the following day.

Barnard could be seen circling Winterbourne Village, not so very high above the ground, when smoke came suddenly from his exhaust. The plane came rapidly down, banked at a sharp angle, and crashed. Its engine was embedded in the ground and the wings

buckled under. Barnard was dead when they removed his body from the fuselage. Captain Barnard twice won the King's Cup, and, accompanied by his wife, piloted the Imperial Airways air liner which inaugurated the Egypt-India routes. When Sir Samuel Hoar, the Secretary of State for Air of Great Britain, accompanied by his wife, flew to India two years ago, Captain Barnard was the pilot.

Sir Alan Cobham, who was in London for the air race, speaking of Barnard, said that he was one of the world's greatest air pilots, and had done as much as any pilot living to bring air transport to the state of efficiency that it is in today.

"Let us hope," said Cobham, "that all his findings and theories will not be forgotten, but have been recorded, and that those who come along will take up the reins where he left them, and carry on his good work."

Captain Barnard, although a famous racing pilot, was also an engineer, and his real job was the scientific development of the air transport piloting. In this field he had few equals.

The night before we left London no fewer than twenty-eight "air raids" were made on the metropolitan area. In sixteen of these the searchlights were at work, and the attackers would all have been destroyed in real warfare. Many tons of bombs, however, were theoretically dropped by other raiders,

lessons of great value in the air defense of London were learned, and weaknesses were discovered. But according to observers the wonderful efficiency of searchlights as an aid to the destruction of enemy airplanes was established. Observers also made the startling discovery that had real bombs been carried in the Royal Air Force Maneuvers vast areas of the city would have been in ruins.

Hour after hour we could hear the drone of engines from the bombers, and of the fighters intercepting them. The whole effect showed the futility of the defensive arrangements London has prepared to meet the oncoming raiders of the future.

I found General Brancker very optimistic in regard to the future of commercial aviation. He predicts "skies of the world dotted with aircraft as now the seven seas are dotted with water-borne carriers—the dawn of the age of universal profitable air transport." This century-old dream will become an actuality within ten years, was his opinion. Some members of the Royal Air Service believe it will take only five years more of experimentation to bring commercial air transport into the consciousness of nations, and to put it on a par with steamships and railroads. In the United States we should unquestionably lead the world in commercial air transport. Our government mails carried by air from coast to coast will give the required 100 per cent full load with daily regularity.

Manufacturers of aircraft since Lindbergh's flight have found it difficult to turn out planes to meet the demand. In the immediate future we will cross the United States in a single day. We will go by airship across the Atlantic in two days, and again by airplane from London to Calcutta in five days. This latter program General Brancker feels is as certain of fulfillment as steamship sailings. The same journey by rail and water takes almost eight weeks today.

The world is unfolding its wings, General Brancker told me. "It was in Burma," he said, "that I learned to my surprise that Europeans and Americans by no means monopolize keen interest in commercial aviation. Among my visitors there were influential Chinese who insisted that immediately the London-to-India air route were an accomplished fact there would be created a continuing loop from Burma to Hong Kong. It was thus easy enough to accept the equally positive statements of Australians and New Zealanders that their countries would not be slow in establishing connecting links.

"And there we come to a fact of tremendous significance for those of us whose destinies are allied with those of the British Empire as a whole. Let me put it in this way. It really doesn't matter much—excepting only as a time-saver—that a Chicagoan can journey from his city to San Francisco in a plane that saves him two full days. After all Chicago and

San Francisco are American cities—with little to differentiate them. Their intercourse, insofar as visits by business men are concerned, is of no significance in the sense I mean.

“The fool-proof aeroplane is as certain to arrive as anything can be. Once absolute safety is assured hesitant air passengers the increase in air transport of human beings will be tremendous. But there still remains the second, and almost as vital obstacle which must be surmounted before commercial aviation can be made to pay—and that is the matter of expense.”

CHAPTER XIII.

THE BRITISH AIR VISION

Great Britain has a far vision of air commerce and airways. India, Australia, Canada, South Africa are all to be tied with London by the airlines. This program is really vital to the maintenance of the great empire, especially so in relation to India, and the new order is not unappreciated by British statesmen.

There is no problem internally in England, Scotland and Wales of connecting various centers by swift airlines. This is already cared for and regardless of the weather conditions by excellent ground transportation. The problem is that of connecting the dominions with England, and of shortening the time of travel formerly a month down to a few days.

And the British are moving very rapidly toward the establishment of this ideal. Missionaries like the Smiths, Cobham, Hinkler and Burney are showing what can be done. In a short time there will be scheduled passenger service between London and Montreal and New York with dirigible airships fitted with all luxuries and conveniences and carrying fifty passengers each. It is quite probable that this service will be pushed across Canada, so that Winnipeg and Vancouver will be equally in touch by air with Lon-

don. Then will come airship service for Calcutta and Bombay and into Egypt, supplementing the airplane service already established. Then the famous expression may be amended to "The sun never sets or rises without finding British craft in the air."

This is not solely a desire to dominate in air commerce on the part of the British; it is a necessity in the movement of world affairs. Unrest in India may not brook the slower methods of transportation, especially since Russia is flinging airlines down towards India and Afghanistan. The new Russian services to the southern border of that country are distinctly a menace to India, and the British are well aware of the importance of these and other activities of the Soviet authorities looking towards India and China.

Australia and Africa, too, must be drawn more closely to the British head center by the airlines, and much flying has been done on reconnoissance to this end. Australia is rapidly perfecting her own continental services, which will connect with the London airship route, so that all of that corner of Great Britain will benefit from the trunk airline to England.

Imperial Airways, Ltd., the subsidized British airplane carrier service, is now paying a dividend. It has added second-class service across the Channel. Its de luxe "Silver Wing" service is a decided lesson for American airway planners to study. Its expan-

sion further into India and from Cairo to the Cape seems a matter of course, following Sir Alan Cobham's pioneering.

A feature of the Imperial Airways development of great interest is the establishment of de luxe cruises. One of these first projected is a \$2,000 tour about the Mediterranean in the winter, cruising through France and calling at Cairo, Athens, Rome, the Riviera coastline and the Alps. This is a notable innovation in European touring, for it passes barriers that forbid sightseeing through the territory covered in anything like the time limit permitted by the air cruise.

The sightseeing that British airways promise to reveal in the next few years will make ordinary touring a very tame idea. The great airships will offer the luxuries of the best steamers, providing cabins, dancing salon and other first-class features. Every type of country—sea, high mountains, sand-blown desert, ancient cities, tropical jungle, great waterfalls and rivers, beautiful lakes and coastlines—will be shown on the flight across Europe and through the heart of Africa to South Africa. In Sir Alan Cobham's delightful little book, "My Flight to the Cape and Back," this is wonderfully well predicted. All of France and Italy, Athens, Crete, Cairo, the Sphinx and the Pyramids, Luxor, the Nile, Khartoum, the Shulluk war dance and the Mongalla washerwomen,

the forests of Bechuanaland, Lakes Tanganyika and Bangweolo, the Zambesi and the wonderful Victoria Falls, and on past the grave of Rhodes to Pretoria, Johannesburg, the diamonds of Kimberly and Bloemfontein to Cape Town,—these were daily incidents to the great aviator and his companions, but some day will be available to the tourists who will see continents instead of streets.

“Daily I became more impressed,” Sir Alan commented in the course of his narrative of “My Flight to the Cape and Back,” “with the enormous opportunities of a great commercial airway that would link up Central Africa with the Mediterranean. Here was a country where it would be possible to maintain one hundred per cent efficiency regularly and at the same time do a trip in two days that by the present modes of transport takes over three weeks.”

Ranking with this air journey of 17,000 miles by Sir Alan Cobham was the remarkable flight of Ross and Keith Smith from London to Australia with two mechanics. These are but two of the long air surveys of intrepid British aviators. They are interesting in comparison with the first round-trip flight over the English Channel made in 1910 by the British pioneer aviator, the Hon. Charles Rolls. This is vividly described in a recent article in an English air monthly by Louis de Silva, a pioneer pilot and an associate of Rolls. It is well worth quoting for

its historical interest, and as well for the vision of the look back on the pioneer flights of the present that will be given ten or fifteen years from now.

"Just seventeen years ago—and now a flight to France is an everyday occurrence!" Mr. de Silva said in his article in "Airways" magazine. "But that serves only to prove the importance and value of the first achievement, and leaves it none the less wonderful. Indeed, with our greater knowledge now, we can only marvel the more at what was attempted and achieved without it. Many will think that the main hazard of the first cross-Channel flight lay in flying for the first time over sea, with no chance of a hasty landing should anything go wrong. But if they can picture the crude construction of the pioneer aeroplane they may realize the extreme improbability of anything at all going right!

"We were fully occupied until Wednesday in preparing our machine. Every portion of the plane's engine and running gear was examined thoroughly and the consumption of petrol and oil carefully tested. We had to insure an adequate supply for the double crossing because of the inability of the machine to take the air with the enormous paraphernalia required for raising it again if it once landed. The necessary buoyancy in case of a fall in the sea was provided by two large air cylinders fitted under the main planes and several smaller ones in various positions on the

machine. I remember we had to inflate the larger ones by attaching them to a hose fitted to the exhaust box of my little old Panhard car which ministered to the wants of the camp! We fitted a compass and adjusted it accurately, but when the engine was started the needle began to revolve in the most alarming manner, and our efforts to overcome the defect were unavailing. M. Leseppes reported that his compass was useless to him [in his Bleriot flight from France to England in the same month] for the same reason. . . . As for the vast arrangement of indicators and instruments which assist the modern airman, there were none! . . .

"At 6:35½ p. m. [June 2, 1910] the machine left on her journey. Flying at about 800 feet, and with a beautifully regular beat from the engine, she curved towards the cliffs and, amid cheers of the thousands assembled, headed straight for the shores of France. After about thirty minutes she disappeared into a dense fog lying on the opposite coast. These dreaded Channel fogs made a grave danger in the absence of an effective compass, since they meant the risk of being lost in the North Sea on the return journey.

"The time that followed was one of the most anxious periods that it has ever been my lot to endure. Far away the tugs could be seen making for Sangatte at their top speed, but there was no trace of the biplane. We who knew of Mr. Rolls's intention to

return watched and watched with sinking hearts as time went on. Suddenly, as from the sky itself, appeared a small speck which, growing larger and larger, could be closely identified as a flying machine; but, until we could see the biplane construction through our powerful glasses, we dared not allow ourselves to feel elated. It might have turned out to be one of the French aeroplanes waiting at Sangatte and now taking advantage of the fine weather.

"On and on came the biplane amidst the most intense excitement, the steamers in the harbor blowing their sirens for all they were worth. Turning off towards the town the machine made a circle of the Castle and finally landed close to the shed at 8:11 p. m. The scene was of unparalleled excitement and enthusiasm, the calmest person being the airman himself. Soldiers of the Garrison Artillery, who had helped us already in many ways, formed two rows deep with clasped hands to keep the crowds back from the machine, or assuredly it would have been smashed to fragments by the sheer pressure of numbers from without.

"After a few words of thanks to the soldiers Mr. Rolls gave instructions for the housing of the first flying machine the British Empire had sent forth from its shores—pioneer and precursor of many mighty fleets. And so ended a great venture and an epoch-marking achievement.

"It is good that he, who so soon was to give his life in the cause of British aviation, was enabled to wrest this success from the obstacles which were the lot of the early airman—good to remember the fearless determination that first linked up our airway to France and led us towards the real conquest of the air which, only seventeen years ago, was thought but the wild dreaming of misguided visionaries."

Compare in your mind the flight of Mr. Rolls in his Model B Wright "pusher" from Dover across to France and back as a truly epochal flight in 1910 with Sir Alan Cobham's flights across Europe and Africa and back in 1925-1926, then envision the coming dirigible airship's flights around the globe with crew and passengers of around seventy-five persons. In 1910 no one in England who was not incurably visionary would admit the thought of air passages to India, Canada, Australia or South Africa.

CHAPTER XIV.

ITALY'S FLYING URGE

"We ought to find a Mussolini," said Arthur Brisbane in his comment on the celebration of the 2681st anniversary of the founding of Rome. A significant feature of the celebration was the establishment for Rome of one of the world's great airports, significant because it shows the great modern, forward-looking city that Rome is today. Rome was not built in a day, nor in 2,681 years. It must be always building, always improving as the world improves.

My impression of Rome was entirely changed on my first flight over it. With most people I had been trying to think of an historical Rome, a Rome ancient of days and of streets and buildings. But from the air I saw a great metropolitan city, busy as any other great center, not basking in its past, but ambitious for the future. When one takes a survey of Rome from aircraft the city seems equally capable with New York, Berlin, London or Paris of making history in the future.

It was like Benito Mussolini to observe the 2681st birthday of Rome by opening great public works. He does not seek to destroy, but wishes to build, to make permanent a constructive Italy. And it is characteristic of his outlook and understanding of his coun-

try's needs that he gives primary importance to aero progress. His policy in this respect has been far more brilliant and farseeing than has that of the United States thus far.

I was in Rome in 1922 when Mussolini at the head of the Fascisti marched into the city and stopped the raising of the red flag of Bolshevism in place of the tricolor. In 1924 I again returned to Rome to find Fascism established; incidentally in this year Premier Mussolini sent four hundred airplanes into the air above Rome at one time to commemorate the birth of Fascism. And now Italy's airplane program, as announced by the Under Secretary for Aviation, will be demonstrated by the ownership in the near future of more than 1,800 military airplanes. Italy is now among the foremost in speed, altitude and endurance for airplanes and is setting unique and individual marks in construction and flying of dirigible airships.

The future of Italy is greatly concerned in the unfolding of her air program and the writing of the country's history in terms of air preparedness and commercial development; and this Mussolini fully realizes. "I want to make all Italians fly," he has said, and he himself is a flyer of no mean ability.

Mussolini and Italian ideals have been the object of scurrilous attack through propaganda in the United States. One such attack by an Irishman who claimed to have lived for twenty years in Italy has been called

to my attention. It has been suggested that perhaps the true facts in regard to Fascism and the Fascisti may serve to remove the effect of erroneous statements broadcast by this man and others in our country. It is not likely, however, that the majority of the American people, knowing Mussolini's ideals and accomplishments as well as they do, will be adversely affected by these unwarranted attacks, yet there are many who may not understand.

The purpose of the Fascisti movement can best be compared in this country to the alert patriotism of the American Legion. The Fascisti uplift represented a certain phase of the spiritual crisis in Italy following the world war. When Italy was threatened in 1918 and 1919 with Bolshevism the Fascisti took it upon themselves to haul down the red flag and keep up the tricolor. I doubt not that history may some day link the names of Mussolini and Garibaldi just as in our country we associate together the names of Washington and Lincoln.

To use Mussolini's words to describe the Fascisti movement: "We are not only a party; we are an army." He organized it when editor of *Popolo d'Italia*. It has its own general staff, its officers and its rank and file, mainly including those who cling to ideals of patriotism and who are willing to give their lives for liberty and justice. The creed of the Fascisti could well be phrased in the purpose of the

American Legion: "The interests of Italy are above every other interest, above competition and ambition of a personal nature."

All Italy is behind Premier Mussolini, and has been since the world war. In the Fascisti the country saw the only broom capable of sweeping away the germs of discontent, unrest and disintegration. Bolshevism would have meant the complete collapse of Italy—Fascism was the movement of self-defense. The Fascisti represent the National Guard of Italy, called into being through a great patriotism and by a man with the capacity for the great work the hour demanded.

We are at peace with Italy, one of our allies during the late war. It is to be hoped that the peaceful relations between the two countries will always continue. Men who wander around this country spreading the doctrine of hatred, attacking secretly while not daring to come into the open, may do much to disturb the friendly relations between nations. Such men are like the peace propagandists who so recently have been sowing their seeds of insidious discord in fighting against military training in our schools and universities. It is just this kind of propaganda that calls for the continual need of active watchfulness on the part of our American Legion.

Mussolini's wounds were received on the field of battle and his war services were recognized by the

Italian government, which conferred upon him its highest awards for valor. Valor at the front in the face of an enemy is quite different from the assumed courage of the poseur on a club rostrum.

Mussolini is by no means the "hideous monster" or the "vacillating tool" that an errant Irishman would have us believe. It is my privilege to say from personal observation that Mussolini decidedly exemplifies a man devoid of selfish ambition, a man whose life has been consecrated to public service. In his great unselfish work he is the typical exponent of the patriotic movement of which he is the head.

Italy has changed since its period of domination by the Caesars. The ruins of the Coliseum in Rome may be typical of the Rome fallen under the domination of the Caesars, but the spirit of Italy today intensely typifies progress and represents the nation emerged from a world crisis under the spiritual guidance and leadership of a great democratic spirit—Mussolini.

I like to think of Italy as an arisen instead of a fallen country, a land whose ingenuity, dauntless spirit and boundless faith are lifting it up anew and to a high place in this idealistic era of worldwide democracy.

The air activity of the country with such ideals and nationalism naturally is extensive. Italy has taken its place among the leaders in speed and altitude

records, in worldwide flying tours, in exploration by airship and in advanced types of aircraft. Nobile, Caproni, de Pinedo, Italo Balbo and names of other air leaders are names any country might wish to conjure with.

Italy has in mind a regular aviation commercial service between that country and the United States and is planning rapid expansion of the airlines to cover the country. The projected airline between Munich and Milan will be one of the best in Europe and one of the most scenic. What would Hannibal, Napoleon and others of old days say to this ease in conquering the Alps, not once but day after day and in a matter of a few hours?

As in Germany and other European countries, Italian financiers and bankers have put their stamp of approval upon aviation and are investing in new lines.

CHAPTER XV.

NEW CONCEPTS OF BATTLEFIELDS

No more striking illustration of the advancement which aviation brings to mankind is found than in reviewing the list of places on the earth where man has been balked, defied, turned back while on the ground and where history has been delayed or detoured because of great natural obstacles. What of these today? Men fly over or by them with ease. The polar regions, the jungles, the great mountains—man takes wings today and conquers.

One thinks of this when flying about Europe. The English Channel was for many years a barrier against the foes of England. Then came Bleriot, Leseppes and Rolls and the Channel was no longer any barrier. The seas, such as the Mediterranean and the Baltic, are traveled daily by the passenger airliners. The high mountains are passed without delay.

The battlefields of European history are today open to the tourist with a sweep of vision never before possible. He may fly over them and gain a comprehensive idea of the combats and then visit them on the ground with an entirely new understanding. This may be done with such rapidity that it will not interfere with the regulation visits to art galleries, museums, ruins and so on. One may understand

why repulses were made, why positions were lost and retaken, why armies were ground down and defeated. To understand the importance of war's campaigns one is advised to study them in the books, view the battlefields from the air and then visit them by ground tour.

The scenes of the world war battles are easily accessible by airplane today, although the ravages of war have been well covered since the time of battle. The wars of the past are more easily understood when one views the fields of battle in comprehensive view. You may look over the hill and see where the armies were located and review the strategies of attack as you cannot do on the ground. The trenches, the shell holes, the ruined towns may not be seen as in war time, but the contours, the rivers, the roads are the same, so one's survey cannot be disappointing.

In the summer of 1927 we flew over practically all of the Western front. It was not easy to find direct evidences of the war, but, on the other hand, it was not difficult to trace the salients and the locations. The airline booking offices are always glad to make suggestions regarding special tours.

It is quite important, however, to know what you wish to see about any battlefield and to study your maps beforehand. Otherwise you will make the flight without being any wiser after you land than before you start. The old balloonists had a proverb, "Pre-

pare beforehand, not afterward." This applies to sightseeing by airliner.

It is worth while also to inquire about the weather and to secure a clear day for your aerial sightseeing—provided you are not intending to travel on a route on which bookings are filled for some time in advance. It is desirable to take notes as you fly, and to have a map to mark ideas on. Mark down what you wish to see more in detail on your ground visit; you will find this very helpful.

The marches of armies, enthusiastic for war and conquests, and the long, wearisome retreats may be traced, sometimes in a matter of hours as one flies. Places such as the dedicated site of the battle at Leipzig where the monument of the Peoples' Battle commemorates the stand of the five nations which really began the downfall of Napoleon in 1813 or Waterloo gather new interest as one traces the historical account in the actual picture spread below an airplane.

If you are interested in the progress of the world war you will not find it difficult to take air passage over the principal scenes of conflict. Near Arras and Vimy Ridge are the scenes of early fighting and the taking and retaking of numerous villages; and the air view will include Bullecourt, where, in April, 1917, the Hindenburg line was first broken by the British.

Along the Somme battlefields the reconstruction

may be traced, as the sites of Amiens, Albert, Delville Wood and Bapaume are flown over. Near Delville Wood location is the place where the tanks were first used. At Albert the new cathedral has taken the place of the old edifice from the tower of which the famous statue of the Virgin leaned so long and fell to prove the prophecy of the close of the war.

Then there are the Marne battlefields. Belleau Wood, the "wood of the American Marines"; Chateau Thierry and Hill 204 of American memories, Chamery, where Quentin Roosevelt was buried; Rheims, the great martyred city; Soissons and the Chemin des Dames, the scene of battles from the time of Caesar.

Between Rheims and Verdun is the Argonne Forest, and at Romagne Cemetery are 28,000 graves of American soldiers, the largest American cemetery in Europe and itself a monument to the soldiers from the States. Here, as one flies from Rheims, may be seen the famous champagne country. The place where they did not pass, even at the cost of nearly five hundred thousand men, the scene of the terrific fighting to batter down Fort de Vaux, Douaumont, Thiaumont Farm, and, south of Verdun, St. Mihiel, with its reminiscence of American fighting—all these will stand out vividly and with new and understandable importance in their world war positions as one surveys them from the air.

Ypres and the Flanders front are easily seen by flying from Brussels. The air tracks of Flanders were the scenes of some famous air fighting in the war, but these cannot be traced as one may locate Ypres, Messines Ridge or Poperinghe.

There are other battlefields, not of men fighting against men, but of men fighting mountains and rivers and oceans, which are no less inspiring than those of warfare. These can only be comprehended by air touring. The Alps, for example, or any high mountain barrier, may be viewed with entirely new historical understanding as the airliner carries one over them at a speed of more than one hundred miles an hour. What it must have meant to toil over these ranges on foot! What of the galleys on the Mediterranean with their chained oarsmen? How long did it take them to creep along the sea that you pass in a few hours? What of the Vikings? They were months in doing what you can do in luxury in hours.

You miss all this if you remain a groundling. Take to the air and history surges up for mile after mile if you will it to do so. For many thousands of years men have wished they could fly, but the wish not being sufficient they have remained rooted or traveled slowly and with great danger. Today you wish to fly, and you do so!

CHAPTER XVI.

AIR PACIFYING THE BALKANS

Extending from southwestern Montenegro to northeastern Roumania is a line of demarcation between ancient feudalism and modern industrialism. Northwest of this line, there is increasing economic unity, with a corresponding lessening of political dissension, furthered tremendously by the development of commercial aviation under the leadership of Germany, with its great Luft Hansa system.

Southeast of this line, they are developing and using aircraft. Mediaeval statecraft has found them powerful and useful weapons of war.

Prague, we found, is becoming the great commercial entrepot to the Balkans. We flew from Paris to Prague in one of the graceful French "Bluebird" Farman biplanes, via Strasbourg. This is the main line of the great French colonial route to the Near East, and continues from Prague through Vienna, Budapest, Bucharest and Constantinople.

Ships carrying passengers and engaged in business of state make the journey from Paris to Constantinople comfortably in two days,—about one-third of the time required in railroad travel. These colonial routes are reaching out everywhere from Europe into Asia and Africa. One realized that here are signifi-

cant beginnings in building new empires and reshaping old ones.

Visiting the International Aircraft exhibition at Prague, we were confirmed in our previous ideas of just what kind of aviation development is going on in southeastern Europe. Czechoslovakia, to be sure, has gone in for commercial aircraft, but this does not mean what it does in France and Germany. It is commercial aviation in the sense that Prague finds it good business to feed fighting planes into the Balkans. The entire emphasis of the Prague exposition was on military planes.

The great Czechoslovakian company which makes the "Avia" planes—swift, waspish fighting ships—is doing a flourishing business in putting Balkan animosities on an air footing. The Czechs have been particularly successful in engine design and construction, and have won notable victories in competitions in Italy, France and Belgium. At the exposition there was an impressive display of training planes, scout planes, bombing planes and fighting craft of all sorts, including specially designed climbers which can shoot up to an altitude of 16,000 feet in eight minutes. There was on view only one good eight-passenger biplane.

In Czechoslovakia itself, interest and development centers on war equipment. There are state lines on which DeHavilland 50's are in use, and on which

regular service is maintained to a few points. The transport of passengers and goods is small, and is at present far from being an economic factor of importance. The bulk of Czechoslovakia's technical and inventive resources are going into the development of military planes.

Real progress in the air began when designers realized that wide departures from military design were necessary for commercial planes. This is qualified, somewhat, by details of engine design. The Czech war engines have contributed decidedly to factors of engine endurance.

The Germans have become interested in this, and are watching it closely, as the length of life of an engine is one of the determinants which throws the balance on the right or wrong side of the profit ledger in commercial aviation. Usually, an engine has to be overhauled after 300 or 400 hours in the air.

Until the recent development of the Wright whirlwind motor by the American designer Lawrence, the Czechs thought they led the world in the staying power and dependability of their engines. The performances of American engines, establishing new records for sustained flight, have caused intense interest throughout Europe.

For purposes of comparison, one might group Czechoslovakia with the Balkan states, so far as avia-

tion development is concerned, particularly in its absorption in the development of military planes.

On opposite sides of this dividing line there are interesting contrasts to be observed. Germany, paying indemnities and stripped of her war establishment, had to find new sources of economic life. Money which otherwise might have gone into armies and fighting fleets for sea and air was turned to the production of new wealth. The healthful and stimulating effects of this were immediately felt. Not only greater German unity but the beginnings of new international amity were the results.

Similar commercial activity in the air, on the part of France, England and Italy, brought a new conception of European fraternity in economic life. Technicians of all these countries contributed vastly to this result, in teaching the lesson that a war plane was one thing and a peacetime plane another.

German scientists, with their endless capacity for patient research, emerged from their laboratories with priceless discoveries. They are now deep in the problem of economical fuel. There is every reason to believe they will find it. Is it not possible that the genii of world peace will come out of a test tube instead of a diplomatic conference?

On the other side of the dividing line are Serbia, Roumania, Bulgaria and Montenegro, between the Black Sea and the Baltic. Rich in natural resources,

with land, water power and minerals in abundance, they are divided by high mountain ranges and ancient rivalries and hatreds.

If they have learned anything from the great war, no one has been able to discover it. In each case, belligerent nationality appears to have been intensified. And Czechoslovakia is feeding them fighting planes and bombers.

Fortunately, the Balkans lie in the pathways of the great colonial air routes. On the plane with me, from Paris to Prague, was a great French industrialist on his way to the Balkans to search out mineral and water-power concessions.

It is this kind of penetration, I believe, which will pacify the Balkans if anything will. My hope, as I returned to the air and got a more reassuring bird's-eye view, was that world aviation would develop so rapidly that the Balkans, being but a minor detail of a great world pattern, inevitably would be pacified and civilized.

CHAPTER XVII.

SHOPPING IN VIENNA'S RIOT

At a week-end gathering in England, European politics were discussed with another guest. I asked him rather casually whether he thought there was any possibility of revolution on the continent.

"None—absolutely none," he replied, with such conviction that he aroused my interest.

"Why are you so positive?" I asked.

"The authorities wouldn't allow it," he replied, as if he had me there. Perhaps he had. I could think of no more adequate reason why a revolution should not occur.

Touring Europe by air, Mrs. Davis and I saw only occasional obtrusions of poverty and unrest. In our pleasant meandering through the skies there was no hint of ominous events to come. Cities and villages were placid and apparently busy and increasingly prosperous. We heard casual speculation about the danger of political disturbances but paid no attention to it.

Descending easily on Vienna, the charming little gardens of Schonbrunn lay beneath us in a wash of warm, golden light. The tiny lawns and toy houses seemed woven into a fairy tale, such as Selma Lager-

lof's "Nels" might have glimpsed on his epic flight on the back of a goose.

As we sank to the flying field, all was clean and orderly. There was efficiency and dispatch, but none of the tightly geared system of the German airports. Even in dropping into Vienna from the air you sense a city of easy, mellow sophistication; of music and song. The boy who took our luggage wore a bright blue smock and hummed a bit from the latest opera.

Crowds were moving about in leisurely fashion. Tourists were everywhere, shopping—endlessly shopping—and prying eagerly into the old renaissance streets, giving into the Ringstrasse, one of the most beautiful streets in the world.

In the old Bristol Hotel, its furnishings a blend of several renaissance motifs, we had a comfortable sense of ease and stability. There was nothing new or disquieting here. The opera that night was "La Boheme," and we were fortunate enough to get seats. It was a happy and care-free audience.

Returning to the hotel, through moonlit streets, we saw the proprietor hand a message to a runner, who hurried out. The proprietor seemed deeply preoccupied. Two porters were whispering. It was not excitement we noted, but a sense of something impending.

"Do you suppose something's happened?" Mrs. Davis asked. I reassured her. We slept soundly.

The next morning Mrs. Davis called me to the balcony.

"There's some kind of a parade going on," she said.

I joined her. Black-shirted men were marching silently by. I had seen the birth of Fascism in Italy and I explained to her that these doubtless were the Austrian Fascists. The faces of the men were grim and they kept an even, inexorable marching order.

"I wouldn't give much for the chances of any communist crowd that runs into that crew," I said.

Hotel attendants seemed evasive, but watchful and alert. With our imperfect German we were all but helpless in trying to find out what it was all about. At any rate, we had business and shopping to attend to. Mrs. Davis was intent on finding a certain kind of Viennese bag she had been unable to get anywhere in Europe.

We went by taxi to the Wiener Bank Verein, a few blocks away, and told the taxi driver to wait. When we emerged, he had disappeared. I hailed another cab, but as we started to enter, a bulky and rather forbidding-looking man in a black shirt pushed in ahead of us and drove away. For the moment I had little respect for the Austrian Fascists.

We walked toward the store where we were to do our shopping. I saw several men darting into a side street.

"There's something happening around here which we don't know anything about," I said to Mrs. Davis.

She was in quest of that Viennese bag and we moved on. We found the shop, and, as we were making numerous purchases, there was a sharp rat-a-tat-tat down the street. I asked the young woman shop attendant what it was.

"Just some kind of a demonstration," she said. Her voice had that strained evenness which is close to hysteria. Mrs. Davis, delving in a mountain of bags, heard nothing.

Suddenly, outside the shop window, there was a swift gathering and a sudden dispersal of a group of men, followed by the crack of a half dozen pistol shots—shots they were, and no mistake this time. It was like something glimpsed in a puppet show—the same jerky movements, and as fantastic. I seized Mrs. Davis by the arm, to draw her out of range of the window.

"Here it is!" she exclaimed, excitedly. "Isn't it a dream! I've been looking all over Europe for this bag."

The shop proprietor gave some orders to two attendants. The steel shutters were closed. Near and far we could hear firing.

"I'll wrap this for you myself," said the shopkeeper. He wrapped the parcel neatly, and then said:

"I must insist on accompanying you to your hotel,

and I suggest that you go immediately. There is some trouble—nothing serious, I hope, but you should go to your hotel and remain there.”

As we left we were loaded with bundles. The shopkeeper, Herr Wilhelm Radeschil, a gallant gentleman, took us through a rear passage out of the shop, by a roundabout way.

While the shopkeeper, like everyone else we had spoken to, was curiously evasive, we did not need to be told there was serious trouble afoot. Up and down the street there was the sound of firing, and twice we heard the scream of bullets. Mrs. Davis walked along sturdily under her mountain of bundles.

About one good brassie shot ahead of us and a policeman had fired into a crowd of men who had attacked him. They were removing the wounded into a side street. The policeman was still there, and as we approached we suddenly found ourselves looking into the muzzle of a revolver.

Mrs. Davis gasped—with horror, it seemed to me. I seized her arm to support her.

“Have you that bag?” she asked.

We pawed through our bundles. Neither of us had it. The shopkeeper bowed.

“Here it is, madam,” he said. “I am taking good care of it.”

The tumult increased as we moved toward the hotel—a swift, scattered and chaotic blending of shots—

men darting in and out of streets—policemen with drawn revolvers.

As we gained the hotel, the shutters were closed and bars thrown across the doors. I had had the interesting experience of observing an American woman going shopping in a foreign city and running into revolution and gunfire. To a woman in quest of a Viennese bag this apparently is something like being caught in the rain without an umbrella. Mrs. Davis went to her room to put on an afternoon gown.

Outside, a few blocks away, we heard the long-drawn-out rattle and roar of machine gun fire. The curious unreality of our experience was coming to an end. We knew we were in the midst of a revolution. Gradually we pieced together the events which had come to this sudden and melodramatic issue.

The world now knows the story. Three young men of the "Front Fighters" organization, somewhat comparable to the Italian Fascists, had been acquitted of the murder of a Socialist workman and his child. There had been a series of cases in which assailants of workingmen were apparently immune from prosecution, and the Social Democrats, a responsible political party, had organized what was to have been a peaceable protest. It had gotten out of hand. It was the communists we had seen marching in that grim parade.

They were burning the Palace of Justice and the

Law Courts even before we reached our hotel. Everywhere, with the scourings of the city joining in, there were looting and bloodshed. I was informed later that the total of dead and wounded was nearly 3,000. Learning that no planes could leave Vienna, I telephoned Herr Otto Merkel, director of the German Luft Hansa system. He assured me he would get a plane into Vienna to take us out. He did.

The next day, when the rioting had subsided and the police were gaining the upper hand, we made our way through the still excited crowds to the flying field. The propeller of the plane was slowly turning, as it waited for us. Our baggage was tossed in, and we shot upward and away. We could still see the smoke from the ruins of the Palace of Justice. In the streets people still were scurrying about aimlessly.

CHAPTER XVIII.

A BARRIERLESS EUROPE

Suspicion and outland hatreds, two of the curses of Europe for many years, are being wiped away in most of the European nations at a faster rate than the world realizes. Rapid and constant intercommunication are great factors in this work, and a new fabric of commerce is being woven over Europe by the cabined airplanes which shuttle back and forth between the large cities of the continent. This fabric carries a pattern of peace, not of war, and it is a pattern that has a prophecy of the coming of the United States of Europe.

The countries of Europe which have been so jealous of their frontiers and have set up barriers against peoples of other nations are seeing the operation of a business force that fails to recognize these frontiers and barriers. This force is air commerce, which moves the passports and customs examinations to the very center of a country if its schedule deems this desirable, subordinating the border line to the convenience of carrier service.

No one can sense how far this business of air commerce will uproot old standards. All of Europe is being flown over and all types of Europeans fly back and forth from one country to another. This con-

stant intercommunication, as swift and safe over mountains or seas as over plains, is making neighbors of one-time far countries, and friendly neighbors, too.

The statement that the airlines of Europe are certain to have a tremendous influence constructively upon the politics of Europe is not a radical assertion—it is being evidenced today. Air commerce is bearing as irresistibly as a tidal wave upon old customs and insular ideas and must inevitably sweep them away and leave Europe clean for a new accord. It was not expected to do this, for it was anticipated as an aid to war and an element of preparedness against the day of battle. Instead, it is forging a public opinion more and more against war, and this just at a time when the European people are in the mood for such an attitude.

This has all been brought about in a very curious way. After the war Great Britain had suddenly a great need for linking the dominions more closely with the mother country. France had greater colonial cares. These two nations saw that airlines between their capitals and far-away colonies were strategically and politically necessary, and they established long-distance airways accordingly. Great Britain will shortly have in operation great dirigible airships which will bring India, Australia and Canada closely in touch with London. The French airplanes are reaching down the African coast to Dakar.

But Germany now has no colonial ties and looks at the air carrier as a business adjunct. The result is that the greatest airway system in the world is German. The great intercontinental airways are under way as German enterprises. If you fly across Europe, east, west, north, south, you will go on a German monoplane part or all of the way.

I had occasion to attend two important congresses in Europe in the summer of 1927, one as an observer for the Federal Radio Commission at the International Radio Conference in Geneva, and the other as a delegate to the International Chamber of Commerce meeting at Stockholm, and after the latter I flew across and around the Baltic Sea and to Berlin. The great cabined airplanes and airboats of the Deutsche Luft Hansa corporation make the Baltic flight between Stockholm and Stettin in six hours and the land flight between Stettin and Berlin in slightly more than an hour—a half day between the Swedish capital and Berlin! Yet this is a short trip when compared with others now on daily schedule of the Deutsche Luft Hansa. One may fly from London to Moscow, from Oslo or Stockholm to Rome or Madrid, or from Berlin to any of the central European capitals—Vienna, Prague, Rome, Madrid, Paris, London, Brussels, Budapest and others—and do so comfortably in a matter of hours. And European folk do travel by air in increasing numbers.

The Luft Hansa system is increasing its passenger record fifty per cent a year.

The executives of the Deutsche Luft Hansa corporation doubtless had air defense in the back of their minds when they began to build commercial aviation, but they have no such thought now. They see business transportation only and work toward that end. They have not built up an air defense machine or a war reserve, but have constructed a great travel and shipping system which is in their minds for commercial progress only.

This statement is at variance with the popular idea about the German attitude, but it is nevertheless a fact, and a significant one because it is representative of a new influence in world politics. I was given a statement while at the Geneva Conference, that German airplanes were being planned deliberately to build up a great German war fleet of the air which in less than two decades would enable Germany to dominate Europe and permit it to sweep the British merchantmen from the seas and the air. I held my own opinion in reserve on this, although the statement came from a very credible source, and I flew around Germany partly to get at the absolute basis of German air progress, and to know whether there is any German air-fighting plan underlying the great German air commerce development.

There is no such scheme. On the contrary, Ger-

man air commerce by its sheer strength of business efficiency is working for peace and not with a view toward any war preparations. No one can go at this proposition openmindedly and analyze it thoroughly and study the German attitude and the German ambition behind the air commerce development, and form any other conclusion. Instead of building for war and conquest, commercial aviation in Germany is working vigorously against war and the thought of war; and herein it is affecting not merely Germany but the rest of Europe. The air commerce executives of Germany think of peace, not of war, and they want less than anything else to see any plans shaped for future conflict.

The great dream of Otto Merkel, director of the German Luft Hansa system, is that as a business enterprise the Deutsche Luft Hansa may become a great force for bringing the nations of Europe into a constant business communication, one with another as well as with Germany, that will make the barriers of frontiers unthinkable, and the countries of the Europe of tomorrow as free of access from one to another as the different states of our United States are today. This has grown upon Herr Merkel from a side conception in his earlier connection with aviation to his greatest hobby. He sees a political effect of the airplane shuttling across Europe that he is profoundly certain will be immensely constructive.

The vision and belief of Herr Merkel dominate his executive work with the Deutsche Luft Hansa corporation today and leave no room in his plans for war thought. In this he is more than a German business executive. He is an economic statesman who will fight strenuously any proposal to project upon the air commerce of his company any official burden of war preparedness.

The United States of Europe, free and untrammelled as to boundary crossings as the United States of America, and no more thinking of fighting one another than our United States would think of civil war—this is a deep vision of many German business men of whom Otto Merkel is representative. His attitude is more striking than that of other business men in his country because he speaks for air commerce, so often thought to be the handmaiden of war, but it is none the less typical of the thought of other men in other lines of German business activity. It is not so much that they are sick of war as that they see better things, better results through avoidance of war—the commonsense view that is inevitable as nations are drawn more closely together than ever before.

I pondered on this as I visited Leipzig, the city of which Karl von Holtei so truly said, "There is only one city in Germany that represents Germany, only a single city where one can forget that he is a

Hessian, a Bavarian, a Swabian, a Prussian or a Saxon." Leipzig with its nine hundred years of history—war, commerce, literature and music—has added to its ancient days the modern honor of having as many arrivals and departures of commercial airplanes as any other European city. Forty or more passenger-carrying airplanes alight or leave at Leipzig every day.

I flew over from Berlin primarily to visit the German Supreme Court, but I was impressed equally with the spirit of Germany so strongly shown in the monument of the Battle of the Nations which commemorates the turning back of Napoleon by the five nations which fought against his forces at Leipzig in 1813. It is a monument that is a great deal more than a commemoration; it has become a typification of German characteristics. The statues in this monument typify four fundamental characteristics of the German people: First, bravery, as expressed by the face and muscles of the arms; second, charity—"let not the right hand know what the left hand giveth"; third, strength—the German nation rehabilitating itself from its own strength; and, fourth, faith—the man who pledges himself to the hope of good, having lost all. These are characteristics with which the German nation has builded so solidly and has presented so indomitable a front to the world in victory and in defeat.

It is because of these traits that Germany, without a murmur of complaint and because of the overmastering vision which senses the future and is confident of the will to do, put aside her rebuilding of the great imperial army which once paraded before the Kaiser at Tempelhof Field, put aside her hope of supremacy on the seas, the desire for which brought her into conflict with the greatest of world powers, Great Britain, and turned to planning the establishment of a great system of transportation which would not only build business in Germany but would carry her message of commercial efficiency to all countries throughout the world.

This is the vision behind the establishment of a transoceanic airline between Spain and South America and a great overland airline between Berlin and Shanghai and Tokyo. It is evidenced in the German airline which is earning dividends of twelve per cent in South America. It was shown in the Junkers airplane flight to Spitzenberg in 1925. This was behind the German movement in which, prior to 1924 and in spite of the restrictions imposed by the allied nations, Germany had assembled in factories outside her boundaries the personnel, aircraft and mechanical equipment necessary for commercial conquest of the air once the removal of the restrictions would permit.

The German Supreme Court building at Leipzig has two striking groups of sculpture. One shows in

bold relief the figure of a man condemned to die and his family disconsolate; and the other shows the figure of a prisoner who has been acquitted and restored to his family by the administration of a system of impartial justice which is the basis of law and order throughout Germany and is respected and honored by all classes alike. I could not but compare these groups in the Supreme Court building with the two sculptured bulls in front of a public building at Konigsberg, representing the opposing attorneys in a lawsuit. From the German Supreme Court at Leipzig down to the German policeman in any city, whose lifted hand represents administration of the law, all spokesmen of law meet respect in Germany.

The American Union owes its strength to free and untrammelled interstate commerce. Two factors have made this possible—the railroad and transcontinental highways physically, and the Supreme Court of the United States legally. The third factor in the development of interstate commerce of the future will be our transcontinental airways. The German Supreme Court, and behind it the impartial administration of justice, undoubtedly can be given a foremost credit in upholding German steadfastness and progress. Perhaps a place beside it, comparable to the American railroad influence, will be given to air commerce in Germany as an influence in advancing that nation rapidly to a pre-eminent position.

Herr Merkel likes to compare the influence of the railroads in developing the Western United States with the possibilities of air commerce in Europe today. He believes that the airlines will have a greater influence on the future of Europe than was exerted by the railroads in America. One can easily believe this after studying the people who fly on the German airliners, and after seeing the amazingly rapid establishment of public airports in European cities.

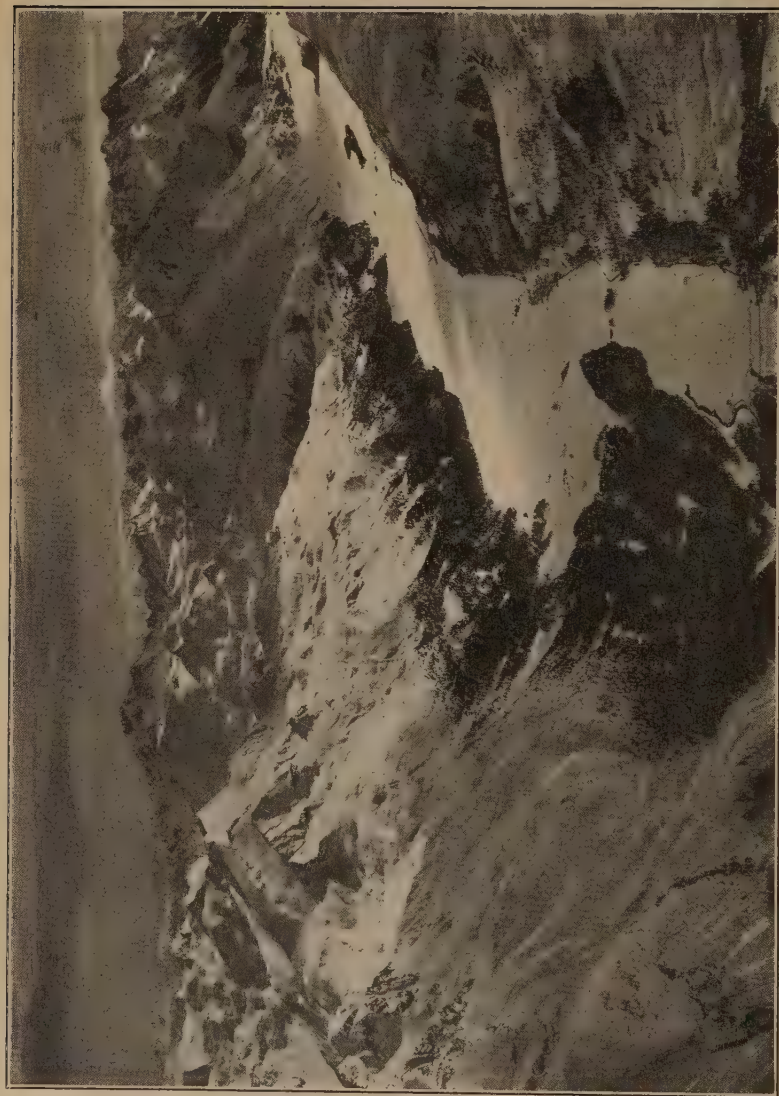
The only country where I found air commerce ignored in preference to military aviation was Czechoslovakia, where there was no evidence of commercial aircraft carriers, but where airplane factories are doing a good business furnishing fighting planes to the Balkan states. This is in striking comparison to the activity in Germany. At Prague the only flying I observed was of a military character. Pilots and observers were practicing combat flying, going through bombing maneuvers and other military training throughout the day. On the other hand, no German airline has been established until its commercial advantages could be shown.

The barrierless Europe, which the managers of the Deutsche Luft Hansa are so confident will be established through the operation of commercial aircraft lines, could hardly be effected without some means working upon all Europe at once, for no country would agree to this unless it can be generally estab-

lished. Radio reaches over all boundaries, but it does not concern itself with passports or customs. Only transportation can attack border barriers, and no form of transportation can sweep by boundary lines and ignore the insular habits of countries as the air carrier can and must do. Air commerce cannot be successful if tied to the ground by frontier lines, and to operate at all the airline must pass over boundaries just as it passes over mountains. It follows, of course, that the daily sight of this innovation, together with the use of the airplane for extra-boundary travel, opens a continental vista to the European. This is something he must have before he can conceive the United States of Europe.



Kalmar Castle, Along the Coast of Sweden, Deutsche Luft Hansa.



The Alps, Between Munich and Milano, Deutsche Luft Hansa.

CHAPTER XIX.

AIR COMMERCE DESTROYS BARRIERS

Woodrow Wilson tried to accomplish a union trans- fusion from the healthy United States to the un- healthy Europe, but he did not have the instrument of commerce at hand for this. Air transportation will furnish this, and will go far toward sweeping the way clear for a League of Nations that will func- tion completely because the channels for it are clear and because the peoples understand and want its operation.

I found that the officials of the Deutsche Luft Hansa—and when this system is mentioned it spells German commercial aviation—had a fine conception of President Wilson's motive and a strong sympathy with the ideals which inspired his proposal to Europe. This may be because of Herr Merkel's one-time resi- dence in the United States and Herr Wronsky's fine understanding of political economy; it is more likely because their practical experience in handling conti- nental airlines has brought home to them forcibly the feasibility of a constructive union of the European nations.

A characteristic instance of this attitude was shown in the spontaneous telegram which came to me at the Stockholm Congress of the International Chamber of

Commerce from Herr Merkel when he found himself unable to attend the deliberations as one of the German delegates.

"Sorry being, at the last moment, prevented from participating in the Stockholm congress," he wired. "Kindly convey to the chairman of the American delegation and other American fellow members of the International Chamber my intense satisfaction at the progress promised in Stockholm towards the accomplishment of the original American conception of the status of the International Chamber of Commerce in the affairs of the world. The moral and practical influence of the Stockholm deliberations should greatly further the chief aim of the organizers and the fundamental idea of the Chamber of facilitating world-wide trade by suggesting methods lessening the existing friction between national and international economic and political considerations. Godspeed to these endeavors!"

In the final sentence of his message there speaks a deep sincerity, typical not only of the conception of Director Merkel but equally of the hope of a large number of other leading business men of Germany. Merkel agreed with me in the idea that the airplane, more than any other factor, will work for peace permanently among the nations of the world. He has in the back of his mind the idea that some time in the future, when continents are linked together as easily

as nations are now flown over in Europe, there will be more united effort in a worldwide sense to maintain peace and build a constructive civilization.

The economic statesman is a new type in Europe, the type of statesman who does not talk much, but who thinks a great deal and displays his energy through action. He is not a whisperer, and he is coming more and more to abhor over-shoulder pointings and dark-corner innuendo. When he talks he wants to do so enthusiastically over features of the work he is engaged in, and he will find an understanding conversationalist in a man in similar work from another country. I found in a German cafe a Frenchman who had flown from Paris with me. He and the German business man whom he had called on were laughing uproariously together at a joke the Frenchman had put over. They had accepted a new post-war understanding of affairs and neither was concerned with "hate rumors" or antagonisms—bygones were buried.

Political statesmen are trying to fan the evil flames of national hates, but they are not succeeding. This stuff is out of style. The new statesman, the economic statesman, who does not even pose as a statesman, is introducing clear vision, straightforward action, international comity through the need of commerce and the substitution of newer and constructive interchanges for the old-fashioned hate and secrecy

and suspicion. The greatest factor in this is the speeding up of commerce and travel by air, which brings once far-away cities into almost hourly communication.

To obtain safety in driving it may be necessary to change drivers, and this holds true in statecraft. Perhaps without knowing it nations are changing drivers; the political drivers are, if they are sagacious, gradually adopting the style of the straightforward-driving economic statesmen. This was noticeable at the World Economic Conference at Geneva. Fifty governments were represented there, and the deliberations were through three commissions, which discussed respectively commerce, industry and agriculture. Distinguished experts, one hundred fifty-seven of them, aided the delegates, and the work of the Preparatory Committee was exhaustive and extended for more than a year prior to the Conference. After three weeks of deliberation the findings of the Conference were adopted by unanimous vote, although the Soviet and Turkish delegates refrained from voting.

The most significant feature of this international deliberation was thus summed up by the report of the Commerce Commission of the Conference: "In spite of the variety of the questions raised, the diversity of theories and the legitimate national sentiments of all those who took part in the discussions, one important

and encouraging fact has emerged; and, having emerged, has become increasingly manifest as the work has advanced. This fact is the unanimous desire of the members of the Conference to make sure that this Conference shall, in some way, mark the beginning of a new era, during which international commerce will successively overcome all obstacles in its path that unduly hamper it and resume that general upward movement which is at once a sign of the world's economic health and the necessary condition for the development of civilization."

The distinct trend of the Conference was toward the breaking down of international barriers. It was shown that the nations which expected to benefit by a policy of economic isolation failed decidedly in this; and the report adopted by the Conference said in a succinct comment upon the nine years of trial of this fallacious theory, "The opinion of the world is beginning to understand that prosperity is not something which can be enjoyed in small compartments." The Conference was quite definitely of the opinion that the time is at hand to face about regarding tariff increases and to take instead a downward course. This applies especially to the tariffs raised because of war conditions and their abnormal consequences.

This viewpoint, taken with the healthier conditions of European currencies and the decidedly better economic stability, shows clearly the movement toward

greater freedom in trade and travel in Europe and the practical hope for realization of action to this end. As Dr. Stresemann, of Germany, said in his discussion of the proceedings of the Conference when speaking to the Council of the League of Nations, the recommendations were not only unanimous but enthusiastic.

Yet this conception of statesmen and experts that barriers between nations must be torn away must have one great furtherance if it is to become more than a set of resolutions, it must have the approval of public opinion in a permanent way in the nations planning to put this recommendation into effect. The best way to get this public approval is to show the public, to spread out before people the actual conditions. Printed reports and learned brochures and editorials have the meat but not the flavor that the public can appreciate.

European nations are today controlled more by peoples than by rulers, and even if legislators see the desirability of lowering tariffs and making long-term treaties and cutting away trade barriers their actions will not be permanent unless the business men and others affected approve. The peoples concerned must see that the recommendations in the Geneva deliberations and other international meetings of their statesmen and business experts produce results making for the progress and advancement of their respective

countries. The problems and proposals involved are intricate and are about prevailing conditions not normal or standardized. Hence, although of vital concern to citizens of the various countries, they are not popular propositions and cannot be understood offhand.

Here is where air commerce comes on the scene. Its spectacular passage over all barriers and its cutting the knots of distance and resultant unfamiliarity have popular appeal—more than that, popular knowledge and visualization of the need for more modern and less cumbersome traffic between nations. Through their own experiences in traveling across countries in a few hours in the air, through their observance of the speed of international travel by air commerce and through the commonplaces of selling and buying in cities of outside nations because they can do this so expeditiously by airway, business men and other citizens learn for themselves the practical nature of the principles and recommendations of the League of Nations and the conferences and congresses on international problems. Air travel shows them as nothing else can do, and they see with understanding.

Air commerce has not really stepped into this stride as yet. It has only been moving in Europe for ten years and some three years in the United States. Its effect upon economic and intercountry policies is realized only by those who are expert in the aviation business; they see what it can do toward

furthering the projects for better international understanding, and perhaps a few economic statesmen outside the aero industry are beginning to see this. However, every person who makes an air journey is unconsciously broadened and enlightened in his viewpoint, whether of municipalities, historical associations, countries or international situations. This impresses every air traveler to some extent, and through this impression he is put into receptive and appreciative attitudes toward state and international problems. This is especially applicable to trade and commerce. It works against barriers because the traveler via air sees for himself the desirability of freedom of transit; he sees it not by perusing a newspaper or by making a journey of a few leagues but by the urge of novelty and wide panorama in travel at one hundred miles an hour at ease over mountains or sea and over boundaries and false obstacles. He cannot associate the barriers raised in a past day as thinkable with the speed of today's air commerce, and his mental attitude is changed accordingly to arrive at the same conclusions that the statesmen, business authorities and experts on commercial policies have reached in their congresses.

When the average man and woman do arrive at this viewpoint, and reach it out of their own experience, the real undertaking of the statesmen and others at the congresses will be easy, for their real problem

is not to deliberate and ascertain what to do but to convince their peoples that what they recommend should be put into effect. They cannot achieve this, especially as to tariffs and other apparently protective details, unless their constituents comprehend the necessity for turning the recommendations into law and action. The international conference itself was but the first clearing of the way; the actual movement over the ground must be by the people.

This has been a slow process in the past, and even today it has a drag of prejudice and misunderstanding. Economic stability and economic peace must be established; indeed, as President Theunis of the International Economic Conference said in his address closing the Conference, there must be economic peace if there is to be political peace. Every development which will facilitate this more certain establishment of economic peace in Europe will make for avoidance of war. The executives of air commerce will be recreant in their public responsibilities if they fail to see this economic importance of their business, but if they do not envision it, their business interests should impel them to forward all plans for greater freedom in international trade.

While the influence of air commerce upon this progress in economic stability and understanding is thus far but small, it is certain that it has made a

start. The influence will grow rapidly, as will a corresponding influence obtained through radio broadcasting.

Far-seeing statesmen in Europe comprehend this and see in air navigation a lusty young giant of progress likely to pull Europe out of the bog of tradition and move her forward at accelerated speed. The fact that this young giant is carrying people across four countries in four hours does not mean that the travelers see less because they move faster. On the contrary, they widen their vision to correspond with the wider range of travel, and their viewpoint broadens accordingly. People are insular because they cannot or do not get contacts with other regions; they become cosmopolite only when they travel.

The late Maurice Bokanowski, when Minister of Commerce for France, brought this message from his country to the American Bar Association at its Buffalo meeting in 1927, when he said: "Henceforth no country can hope to be sufficient unto itself alone; no country can reasonably aspire to splendid isolation, for every day the progress of science and industry is bringing all nations closer together in our constantly shrinking world. Only a few weeks ago, as Minister of Aviation, I had the pleasure and privilege of welcoming your heroic fellow countryman, Charles Lindbergh, who brought the magnificent inspiration of a victory of human will and human

energy over the blind forces of nature. Every day invisible waves carry the written and spoken messages of mankind through boundless space. What problems are conjured up by these new means of communication between the peoples of the earth! What other and greater problems will arise tomorrow!"

This "constantly shrinking world" is even today being affected by the aero progress of European nations. France has flung out airplane communication across the Mediterranean past Fez and Casablanca and down the coast to Dakar. This is purely a colonial line with a value more strategic than commercial, but it will have its influence in shrinking continents. The French saw this and characteristically went ahead with the project. Italy, through the Navigazione Aerea S. A., of Genoa, is linking Rome, Naples, Genoa and Palermo, and this company announces this as preliminary to international operation. Great Britain with its Imperial Airways has pioneered between London and Paris. It has linked Egypt and India together, with a remarkable service between Cairo, Bagdad and Karachi. The great British airways did not get under way until 1930, when the dirigible airships now building are expected to be in service which will shrink the distance between Australia and India and London and will later travel the Atlantic between Canada and the British capital. The A. B. Aerotransport, the Royal Dutch Air Lines

(the K. L. M.) and other services are also flying toward the future narrowing of Europe.

Aside from the established passenger lines which carry their thousands of passengers, the use of private or special purpose airplanes is increasing on the continent. Commercial men travel about by air and solicit business over many times the area they could cover by ground travel. An English magazine reports the successful trip by airplane of a salesman who demonstrated and sold vacuum cleaners from town to town, and also has found a business traveler who has reconstructed the cabin of an airplane into a showroom. Both the Austrian and German Alpine Clubs have standing contracts for the use of airplanes in locating and dropping food to mountain climbers and furnishing supplies to remote huts in the Tyrolese and Bavarian mountains. Members of the clubs very frequently travel by air to the points where they begin climbing. All these uses bring more supporters of the policy of greater freedom of trade and travel between the European countries.

This must inevitably expand to worldwide influences, and, in fact, this wider influence of air commerce is being felt today. The German thrust of aircraft into South America and past Russia to the Pacific will soon be on schedule. The airship developments will follow with the long-range carrying of seventy-five to one hundred passengers on a single

ship and at greater speed than dirigible airships have heretofore been operated. The day is in sight when oceans will not be barriers for aircraft flying on schedule. The flight of the Deutsche Luft Hansa seaplane between Stettin, Germany, and Stockholm, Sweden, across the Baltic Sea is one-fifth the distance between San Francisco and Honolulu with a stop at Kalmar for fuel. This is all in the day's work of the Deutsche Luft Hansa system. The problem of expansion of flights of the type of the Baltic Sea crossing to the wider type of the San Francisco to Honolulu schedule is today only one of power and size of craft, and it is established that sufficient and reliable power can be furnished.

The problems of expansion and profit in airlines are indeed only mechanical, and they are being worked out today in laboratories and engineering offices. The tendency on the European airlines is quite definitely toward the larger craft in which the chart line of payload will pass the line indicating power consumption. In the smaller airplane, and especially in the plane with but one motor, there is entirely too much power cost for the load carried. When the number of passengers reaches thirty the added expense does not jump along with the added passenger capacity. Dividends begin to appear if the larger airplanes can be operated safely and swiftly

enough, and this is merely a matter of development which engineers and other experts are handling.

European air masters have already accomplished much and are confident of accomplishing a great deal more in building a wide and successful air commerce. America got away to a flying start in 1929, and, after the American fashion, when once under way began to move as fast as anybody else in the world.



Boeing Airport, Burbank, California. The Model Air Terminal, Showing Administration Building, Hangars and Runways.

CHAPTER XX.

AVIATION AT HOME AND ITS FUTURE

When the Attorney General at Washington wired his Denver friends the query, "Why is an airplane like deadly poison?" he waited an hour for the reply. None came, so in his impatience to spread the news he sent the answer, "Because one drop is apt to be fatal." If he had been an expert on aviation he would have said, "Because the one drop that may be fatal is hardly ever taken."

The observation of the Bureau of Aeronautics of the United States Department of Commerce, charged with the supervision of commercial aviation in America, is that less than three per cent of all accidents can be directly attributable to commercial transport airplanes operated by pilots who were passed and licensed by the Department of Commerce. This is truly a remarkable showing.

On May 20, 1927, Charles A. Lindbergh left America for Paris, arriving at his destination the following evening. One year later the Saturday Evening Post, in commemoration of that trip, pictured on its famous cover page the figure of an aviator symbolical of Lindbergh with his eyes focused upon a silver-winged monoplane bearing the name, "Spirit of Aviation." Our mind turning backward fixes upon the hazards

which have been bridged in the interim. The "Spirit of Aviation" today represents the forward-looking vision of the American people, who have adapted themselves to a new method of transportation.

The early romantic development of the railroad and the automobile is giving way to the romance of a faster mode of travel—adding even a higher element of romance. More than seventy years have passed since the opening of the Butterfield stage route between the Mississippi River railroad terminals and California, heralding a then more rapid period of transportation of twenty-nine days between St. Louis and Los Angeles. The pony express of 1854 gave way to transcontinental railroad transportation; now the ties of steel connecting coast with coast are already being supplanted, although in small part, by the airplane as a medium of transportation.

Much less than a century ago six months were required to go by covered wagon from the banks of the Missouri to the bank of the Sacramento river. Now the cabined airplane wings this distance in a day's flight. In the old days, as we count settlement in Western United States, the covered wagon trip across the valley of the Great Salt Lake to Los Angeles took seven weeks. Today's Western Air Express plane flies the trip in five hours. It is possible to leave New York at eleven o'clock in the morning to arrive at Chicago, 712 miles, at seven

the same evening. Fifty minutes later a Boeing airplane leaves Chicago to arrive in San Francisco over a course of 1,950 miles at 4:30 o'clock the following afternoon. From Chicago to Dallas, Texas, is covered daily in twelve hours of air travel. The distance between Los Angeles and Seattle, 1,200 miles, is now flown by transport planes between midnight and 6:15 o'clock the following afternoon.

Air travel is being speeded up. Transcontinental train and airplane services may be combined for travel between Los Angeles and New York, a matter of but forty-eight hours. In this way travel by air during the day may be coupled with comfortable nights aboard Pullman cars for those who are not yet inclined to become "fly-by-nighters."

In the years before it was determined that the United States would enter the world war good roads were urged as a preparation for national defense. We now have a system of national highways, constructed by the states with the aid of the Federal government. In preparation for the future a system of national airways is the logical basis of our national defense. These national airways should be built by the states and the Federal government in cooperation, as in their construction of national highways.

National airways should be planned and constructed in the same manner as national highways have been developed. Such a plan can be worked out success-

fully, not only to meet the needs of transportation in time of peace but also as an element of defense in time of emergency.

Those who have spent any time in the air will realize that the impressions received reflect the individual's point of view. For example, Will Hays, when Postmaster General, made a flight from Washington to New York, then wrote a really wonderful word picture of what he saw and felt. I have in my mind my own impressions on a similar trip, crossing the boundaries of various states in rapid succession. In an airplane flight between Washington and New York one will cross boundaries of six states in an hour and fifty minutes. One who may think along legal lines will instantly realize the underlying and fundamental necessity for Federal legislation covering aeronautics.

The impressions of Mr. Hays were those of a layman making his first flight, and his imagination, given to large enterprises, reflected instantly the magnitude of the thing which he sensed from the air. Circling above the nerve centers of our financial, industrial and political life, he realized instantly how quickly the business life of this country is sustained through its arterial intercourse with financial centers which radiate from New York.

He gives us what he is pleased to term an "airplane view of our responsibilities." He conceives, in fact, no way in which a maximum degree of success in

one's work can be achieved so quickly as in detaching ourselves every once in a while perchance through flights of our imagination or, if possible, through actual flight in the air, thereby gaining an airplane view of our responsibilities. Thus we may discriminate between what is fundamental and what is non-essential. We can see in a glance the relation of our own business to business as a whole, the relation of ourselves as individuals to the world at large. Then we will rise above the petty, narrow criticism which will be directed against every effort in the way of progress; we will detach ourselves from small-town ideas incident generally to restricted environment; we will think in terms of applied large ideas and will not be embarrassed by small criticism, but, viewing our activities from the viewpoint of a larger vision, will be able to move in a new sphere, thus obtaining the clearer vision so necessary to a maximum degree of success.

From the time that the prophet John received the Revelation from the mountain top we find repeatedly in history that all great minds, the solitary thinkers and planners so fittingly exemplified by the immortal Lincoln, have all gone to the mountain tops for their vision of the future. In imaginative flights if not in actual airplane travel, they have sought to climb from every-day problems to the mountain peaks where

their vision might be clarified through their closer contact with the Infinite.

And so today the admonition of Mr. Hays that we should occasionally get an airplane view of our responsibilities brings us to the recent developments at London, where the great powers of the world met in conference, to dispose of the question of armament so far as dreadnaughts, cruisers and submarines are concerned. In reserving recommendations for the control of aircraft one sees the thought, not spoken but implied, that even with every dreadnaught scrapped we still have a new avenue of warfare, new vehicles of death and destruction, poison gas and bombs.

A mistaken idea exists in this country regarding lack of subsidies for American aviation. It seems to be a general opinion that the United States has defaulted in providing suitable subsidies to encourage civil aeronautics, while Europe has gone far ahead of us in this matter. This is not the case.

European countries have been liberal in providing semi-military subsidies. Probably \$275,000,000 has been put into European aeronautical subsidies since 1921. All this has been done with the war idea underlying. As a result air transport lines have been built up and factories have been encouraged as a military or naval service reserve, but commercial aviation and private flying actually have been retarded.

It is becoming evident that the European plan of

subsidy is wrong and will become an incubus upon the governments involved, and, moreover, very difficult to get rid of. On the other hand, it is being shown that the United States has followed a large plan of subsidizing aeronautics that is proving eminently successful and will continue to develop progress in commercial and private flying. It will no doubt be asserted that America has done no subsidizing, but this is not the case.

The distinction between European and American subsidies is that the European plan is for direct subsidy payments, while the American method has been developed along indirect lines. The United States has granted subsidies through air mail contracts, through pioneering a transcontinental air route, through research, through airway improvement and lighting, through meteorological and other navigational aids, through important developments like the radio beacon, through maintaining standards of construction, inspection and pilotage by the Aeronautics Branch of the Department of Commerce, through the establishment of airport standards, and in other ways. All of these are definite methods of subsidizing. At the same time they leave the concerns benefited independent and unhampered in business.

In time it will be definitely proved that Europe has formulated a plan of direct subsidy that will hang on the necks of the countries interested, while America,

spending considerably less money, has really encouraged a large development and has established air commerce under private ownership in a very large way.

There is no question, however, that commercial aviation is making progress in that direction and looking towards the maintenance of America's supremacy. In a report prepared with a great deal of care and completeness by the Aeronautical Chamber of Commerce it is shown that commercial and other civilian flying in the United States in the year 1929 was greater than three times the flying of the military and naval and other governmental flying. All civilian flying, including airlines and other commercial flights and private flying, amounted to 149,579,451 miles. All the military and naval and other governmental aviation totaled 47,967,139 miles. This is a total of 197,546,590 miles of flying in the United States during 1929.

Passengers, mail and express were flown more than 90,000 miles every twenty-four hours of 1929, and the territory covered by this air service comprehended more than three-fourths of the country's population. The principal American airlines which were operated on regular schedules, not including those which could not be designated as major transportation lines, carried more than 165,000 passengers and more than 7,000,000 pounds of mail and express in 1929. Their mileage in 1929 totaled 20,242,981 as compared with

10,472,024 miles in 1928. The gain in passengers carried over the preceding year was even more astonishing, for in 1928 the major airlines carried 52,934 persons as against 165,263 passengers carried in 1929; and these passengers were flown 14,889,350 miles. The total number of passengers carried in 1929 was 2,995,530.

"Outstanding developments in 1929," the Air Commerce Bulletin of the Aeronautics Branch of the Department of Commerce said in reviewing the year's flying progress in America, "include the unprecedented linking of airlines with railroads, steamship service and automobile bus lines; increased aircraft production, which has grown from about 300 in 1921 to more than 7,000 in 1929; and the marked increases registered by all types of aeronautic licenses issued by the Department of Commerce.

"Further developments during the year include the practical application of the 'mecaviator,' an automatic mechanical robot which has flown an airplane from Dayton, Ohio, to Washington, D. C.; the capacity and echo altimeters and other instruments for increasing the safety of all types of flying; the earth-girdling flight of the Graf Zeppelin in 21 days, 7 hours and 34 minutes; the new speed record of 357.723 miles per hour attained by the British after the Schneider Cup Race; the round trip from New York to Los Angeles and return in less than thirty-seven hours

flying time and in a total elapsed time of less than forty-five hours; and the initiation of construction of the largest rigid airship in the world with the enormous future the undertaking portends. . . .

"In this connection, moreover, it should be remembered that our daily scheduled mileage is now unequaled in any country in the world; we have night schedules unheard of elsewhere; we have one thousand private, commercial and municipal airports in operation with an additional 1,200 proposed for early construction; we have nearly fifteen thousand miles of airways equipped with all known aids to air navigation, including intermediate landing fields, beacon lights, radio communication, teletype installations and weather service.

"In the near future we shall undoubtedly have transcontinental service which will carry us from coast to coast in twenty-four to thirty-six hours; we shall have also, sooner or later, transoceanic service for both passengers and cargo. The past year's many epochal achievements have combined with a day-in and day-out demonstration of aviation's safety, reliability and utility. . . .

"The year 1930 is to be a period of constructive readjustment, and the aircraft industry will continue its progress in a sound, economic way. Altogether the current situation presents an encouraging outlook, presaging a constructive reorganization of air com-

merce and of the aeronautics industry, combined with conservative, sound, progressive development."

This development appears already to be taking the lines of greater safety, better speed and larger capacity. Safety is on excellent standards now, as the records show, but there cannot be too much safety, and aids to navigation, higher standards for pilots, and other features making for absolutely safe flying are not being neglected by the airlines or the authorities. We shall continue to lead the world in night flying, but it will be typical in its assurance of all comforts for the passenger.

There is a decided advance heralded in the larger airplane, that of fifty to one hundred fifty passengers, which will be revolutionary in appointments, in speed, in range of travel and especially in affording lower tariffs. An examination of the specifications of these new air giants shows that two things to be expected are being realized. A capacity far beyond what was thought possible in the airplane not long ago is made feasible. A range of travel that is more than transoceanic is promised by the designers, and this means a much better service overland as well.

There is a promise that the greatest of all airliners as to capacity, designed by one of the world's greatest aeronautical engineers, will be produced and first used as an American output, although the developer, Dr. I. E. Rumpler, is a German. After a number of

years of engineering and planning, Dr. Rumpler has produced what will probably be called "the flying wing on two boats." The famous builder of the German Taube began on this line because he believed that the airplane could be developed to achieve trans-oceanic commercial service, and as a result he has produced what has been long looked forward to as the ideal type, the flying-wing airplane, in which passengers and other payload, motors, etc., excepting fuel, are carried in the wing and there is no other body. Stability and safety are accomplished by a sweeping departure from conventional lines.

The new Rumpler will have a capacity as a passenger airplane of carrying 135 passengers and a crew of 35. It is to have ten motors of 1,000 horsepower each. A feature of the ship is its efficiency, for it can take off with but six motors running. The motors are placed inside the wing where they may be repaired without difficulty, and the propellers are placed at the rear of the wing.

Passenger compartments, each providing accommodations for six passengers, are toward the front, and are arranged so that the passengers have excellent view. Back of the compartments is a wide promenade which prevents the noise of the motors from being heard by the passengers.

The spread of the wing is eighty-eight meters and its width is twelve and one-half meters. The ceiling

of the cabins is high enough to be out of the way of any person standing erect.

The greatest difficulties of the flying-wing type are in maintaining stability and providing a low center of gravity. Dr. Rumpler has accomplished this by placing two boats, each forty-eight and seven-tenths meters long, which are the alighting gear. The boats are eighteen meters apart. They will prevent the wing from turning over in a storm and are large enough to afford take-off or alighting in case of rough water.

The gasoline tanks are located in the boats and the fuel is pumped to the motors by fuel pumps which work only when the motors are running. This weight is a decided safety factor, for it aids in providing a lower center of gravity. As only the gasoline used is near the motors the danger from fire is materially reduced.

A feature of design provides that every weight unit is on a particularly designed space in the wing, which gives a minimum of bending movement. It is possible, according to Dr. Rumpler, to increase the span much beyond what has been considered a limit for a large airplane, this being feasible through the original system of wing design.

This is a significant step forward and a prophecy of what may be expected in future. If Dr. Rumpler can build a successful airplane carrying 170 passen-

gers he will be able to design one to transport 250 passengers and the crew. This presages the large-load, long-range aircraft which will bring fares and express rates down below railroad charges.

CHAPTER XXI.

JAPAN'S URGE FOR AIR SUPREMACY

At Geneva in 1927, while an onlooker at the sessions of the Disarmament Conference, waiting impatiently for an agreement to be reached, I was impressed with the feeling that Japan for the first time realized that the United States has no policy of aggrandizement which will conflict with the national aspirations of Japan, and that we are not embarking upon any course which will conflict with Japan's power and influence in the Pacific.

Japan's viewpoint has been evidenced in her airplane policy. Her first airplane flights were made in 1910, two years after the Wright Brothers made their flights at Fort Meyer. After the world war Japan embarked rapidly upon an air program, both military and naval, which by 1930 would make her at least the second greatest air power in the world and possibly a rival of France for first position.

For what purpose was this rapid construction of air armament? At the Washington Disarmament Conference and again at the Geneva Conference Japan maneuvered stealthily to jockey into position as a great world power, seeking to become master of the Pacific and to control the destinies of those nations that border on the Pacific. Across the ocean

was her neighbor, the United States. Japan's eyes were cast longingly down the Pacific coasts seeking for new land which her sons could cultivate and perhaps later obtain through force if war were declared.

At Geneva Japan for the first time realized that her neighbor across the Pacific is not a potential enemy, but that the nation which through Perry opened Japan to the world and made it possible for Japan to occupy a seat among the nations of the world, was friendly toward Japan and that the two countries through a spirit of cooperation might bring about far more lasting progress than in any spirit of enmity. Japan's desire to cooperate is still manifest during the sessions of the Disarmament Conference now in progress at London.

The war in the Pacific fails to materialize when Japan realizes that there is no danger to be feared from the United States. Rather, we shall continue the peaceful gesture which we made in sending a squadron of airplanes across the Pacific in 1924; as our airway systems cross the boundaries of the Pacific a feeling of goodwill will be stimulated and in time break down all the invisible barriers which have been thrown up between the two countries.

Japan's feverish activity in arming herself in the air is thus shown to be a feeble effort to guard against perils of which she thought the airplane the exponent. The peril, however, turns out to be a harbinger of

peace, for the airplane carries the message of goodwill. In time the theory of absolute air sovereignty in the nation will break down as nations coalesce in commercial contacts. Through cooperation between the United States and Japan the danger of war between the two countries will be minimized. Trans-Pacific air transport companies will follow our ambassadors of peace, removing all elements of discord and threats of war.

The misapprehension which at one time seemed to prevail in aviation circles, especially in the United States, that the Japanese would not make good aviators has been fairly well cleared up by the Japanese flyers themselves. When aviation was young the Japanese student of aviation in the United States was now and then observed to shut his eyes if a "crash" seemed certain, leaving the outcome to fate. This was perhaps typical of the racial attitude. It is not typical now. The reason lies in the remarkable capacity for adjustment inherent in Japan's sons and daughters. Once a Japanese thoroughly comprehends an advanced condition he can quickly adapt himself to it. A very good instance of this is found in the flight of the American world flyers in 1924. A Japanese air officer declared one stage of their flight absolutely impossible at the scheduled time. He thought it a miracle when the Americans did accomplish the flight. Yet it was not many months later when this

same officer of the Japanese service made a long flight under very similar conditions, accomplishing what at one time he thought to be impossible.

Japan's wish to fly is not newer with that nation than with any other people. Wherever man has seen a bird he has wished that he might rise into the air. Centuries ago attempts were made in Japan to build flying devices. More than one hundred years ago the Japanese experimented with gliders or motorless aircraft. It is related that one of the experimenters of that time fell with his machine directly in front of the procession of a daimyo or feudal lord. It did not profit the would-be airman that he was not badly hurt, although his machine was smashed, for he was hauled out and immediately executed for thus annoying the daimyo; he knew what it meant to go counter to the traffic regulations. That discouraged gliding for the time being.

Today Japan's preparations for air defense are not put into aircraft alone, but all airports and airways are planned with regard to possible war use. An example is shown in the plans announced by the Japanese military authorities for the airdromes—not one, but four—at Tokyo. Large airdromes were planned for the four corners of the capital at Yoyogi, Tokorozawa, Ichikawi and Chobu.

In this connection General Uyhera, commandant of the Japanese army aviation school, made suggestions

arising from the experience of nations in the world war in air raids. Preparedness at Tokyo has taken advantage of these experiences. In General Uyhera's opinion the greatest danger for the capital in time of aggressive war will be in attacks by enemy aircraft from mother ships and by aircraft operating with a wide range of action. Japan has prepared for this partly through air defense plans on other islands either in or controlled by that country. And if air attack should come she will be ready to launch fully three thousand well-manned opposing aircraft, truly a formidable defense—or means of aggression, if that country sees fit to so use it. This will make possible not only an outlying defense of large proportions, but will leave a large reserve defense at the fields surrounding the principal cities.

Japanese airdromes are to be built along the Korean frontiers, while the islands under Japanese mandate have not been neglected. And back of all this stands a most important primary move. The Japanese people have been made airminded. Under the guidance of the Imperial Aviation Association the idea of patriotism so fundamental in Japanese training has carried with it the necessity for a large aviation program. When the American army aviators passed Japan on their flight around the world some demur was experienced on the part of the Japanese government. Permission to alight was at first withheld; then the sug-

gestion was made that the American ships be flown by Japanese aviators while passing over that country. The keenness with which the Japanese people absorbed news of the round-the-world flight doubtless had its effect upon the government, and possibly the permission to stop wherever they wished was with a view to the psychological effect upon the people of Japan. At any rate, the effect was tremendous, and the Japanese people did not overlook the fact that it was possible to fly airplanes from the North American continent to their islands. This had its full value in furthering popular support and interest in the Japanese program to make that country the great flying nation in the world.

A most interesting development in Japan's military and naval policy is in the rapidity with which she has turned to mobility. This is evidenced in the expansion of construction of light cruisers and in the remarkable expansion in air armament. It is not at all unlikely that Japan will surpass France as an air-fighting nation, and in equipment for mobility of her military and naval forces she is today far ahead of the United States.

Children in the public schools of Japan are taught aviation. Mercantile companies are encouraged by bonuses to use airplanes. In strong contrast to the American policy of indifference toward civilian air

concerns, the Japanese army air forces distribute planes and generally encourage the civilian aviator.

In her aviation program Japan has drawn freely upon the best experience of Germany, France, Italy and Great Britain, but has not permitted any intercourse or business with American air concerns or men. She has been formulating her own plans from the best European practice. So far her progress with the dirigible airships has not been great, although she has a number of moderate size, sufficient to train personnel. When the German, English and American large rigids dominate the air news in a few years Japan will not be found behind in acquiring the best types of the great airships. The Japanese are sure, too, to make as fine navigators of the big airships as any men in the world. They are more naturally fitted for this than for the airplane.

Japan is awake to the importance of encouraging civil aviation, and is improving airports and aiding airlines. Four commercial air services of the summer of 1929 are being doubled in number and mileage, so that in 1931 the Japanese air schedules will cover nearly 2,400 miles. This is in spite of a national apathy among people generally as to the importance of airways and severe natural difficulties. As in Germany the newspapers use the airplane for fast outside deliveries; the large newspapers are much interested in the forwarding of Japanese aviation. Airplanes

are utilized by the eight leading newspapers for their delivery systems.

Both land and marine airports are available, and there are about an equal number of each. By the end of this year there will be around twenty-five public airports in Japan and Korea, in addition to a number of private airfields. International airports are being constructed and equipped with modern appliances.

Most of the airplanes are manufactured in Japan from European designs or under European licenses. Foreign motors, nearly all European, are being used. Japan does not encourage agencies or other relations with American firms manufacturing aircraft or accessories.

The Japan Air Transport Company is semi-official. The government guarantees to the company's stockholders a minimum annual dividend of 8 per cent. A subsidy of more than \$9,000,000 is guaranteed to the company, extending over a period of eleven years ending in 1939. The company is known in Japan as the Nippon Koku Yuso Kabushiki Kaisha, and it has an authorized capital of \$4,600,000 (10,000,000 yen). Only Japanese subjects are permitted to own stock. It is planning as one of its operations a regular passenger and mail service between Toyko and Shanghai, where it is expected to connect with the Deutsche Luft Hansa, in that case giving scheduled service between Japan and Moscow, Berlin, Paris and Lon-

don and connections with the other large cities of Europe by airline.

One definite result of the Japanese airline development is that of drawing Korea (Chosen) closer to the Japanese capital and military headquarters. Special attention is being given to new airports in Korea and to facilitating large airplane movement between Japan and the mainland. Japan is decidedly not missing any opportunity to prepare for eventualities.

If amicable relations are to be permanent between Japan on the one side of the Pacific and the United States on the other, they can be established and maintained more surely through cooperation in commercial aviation than in any other way. If the Pacific were to be spanned by airlines jointly established by our country and Japan the barriers between the countries could be broken down and a new era of Pacific goodwill established and maintained.

CHAPTER XXII.

THE PATHWAY TO PEACE

The years 1928 and 1929 will stand in aeronautical history as the years of passage from war conceptions of aircraft to their acceptance as instruments of commerce. More than that, they will place the airplane, once conceived only as a fighting craft, as one of the greatest developers of peace and as a definite influence toward the abolishment of war. This is not because of its negative influence by adding to the scientific horrors in warfare; it comes about through three constructive uses of airplanes which induce powerful opposition to war.

This may be rather surprising, since the airplane was regarded up to a few years ago principally as a war machine. Prior to the world war it was not even a potential peace factor, and in the early stages of the war it was more of a spectator than an actual participant, although its combat, raiding and observation possibilities began to appear. Aircraft emerged from the war with a general classification as war devices, and the first attempts at transportation via air were subsidized with an underlying thought that preparedness for defense or aggression was being promoted thereby. The expectation was that every development which could be given to aircraft would

advance a wider and more effective range of war. Yet now we have the anomalous situation that out of warfare has sprung the greatest instrument of peace, with the possible exception of radio, which man's inventive genius has produced.

Use of the airplane as a foreshadower of war is, of course, still important, and extends beyond the active military and naval training. Great Britain's airlines are in general projected either to tie colonies closer into the Empire or for training, yet it is the purely commercial operation of the Imperial Airways, Ltd., that enables the concern to declare dividends. Czechoslovakia makes its principal flying work the feeding of military aircraft to the Balkan States, and thus far is indifferent to air commerce. The Soviet Republics are interested in aircraft principally for their fighting value. England and the other European nations have been influential in furthering Asiatic military air services. We have in Europe today two contrasting policies—on the one hand the policy of a larger nation to supply smaller nations fighting aircraft and then apparently sitting back to wait for the spark to be applied which will lead again to world conflagration. On the other hand is the policy of economic statesmanship in laying aside the airplane as an instrument of warfare in order to utilize its sister type as a means of transportation and extension of commerce.

Germany furnishes the most striking proof of this. Since the war the German people have become "air-minded" in their attitude toward airplanes as a means for transportation, and the great German airway system, the Deutsche Luft Hansa Company, has its lines flying over Europe, flung to the north into Finland and Sweden, into Moscow and Budapest on the east, Switzerland and Spain on the south, and to Amsterdam, London and Paris on the west, and airlining together every important city between these points. The German system also has under way intercontinental air transportation across Asia and Africa and into South America, and would extend this to North America were it permitted to do so.

Whether so great a development was conceived solely as a business and not at all for war training is not of record, but it is clear that Luft Hansa's managing directors stand decidedly for aircraft as a peaceful feature of the world's transportation and are strongly against its possible conversion to war uses. They foresee German aircraft flying abroad and at home as business craft and do not relish any conception of a shift to a war area. This is also the attitude of Dr. Hugo Eckener, the successor to Count Zeppelin in the German dirigible airship development. In all probability it will be the stand of other authorities on air transportation outside of Germany.

The reasoning which brings this about is not diffi-

cult to understand. Every expert in actual air transportation operation who is able to observe a general transportation development of an airline—excluding airlines which are purely mail-handling concerns or which operate on such small capacity that tariffs must be excessive—sees great possibilities in a well-managed business of this sort. Time and much expenditure of funds, a special and extremely thorough training of personnel, some political strategy and the collection of highly specialized knowledge are essential in building a successful air transportation system, as with any transportation business.

The more efficiently such a system is built up, the more thoroughly war would wipe it out, seizing men and craft and utterly demoralizing the system as a business. And at war's close, in all probability, profiteers who would be able financially to do so and who would likewise be powerfully established politically, would have and would take full opportunity to go into the airline business instead of the men who built up the original system and who, because of their very expertness, would be called upon to fight and not to profit. These developers of air commerce would turn back from the war not to resume their old executive places but to become employees of profiteers. And they would do this, for the grip of transportation upon its devotees is firm, as story-tellers know in many lands and on many seas, and it holds the air-

man even in greater force than the sailor of the seas or the follower of the rails.

Why, then, should men who are held responsible for expenditures of large capital and much human effort favor the gutting of their resulting development and the absolute loss of their international extensions as well as their commerce in their own country? Their influence is certain to be most vigorously against war, and they will be alert in opposition when battleship builders, munitions makers and their politicians wave the war flag. The air transport men will have nothing to gain and everything to lose if war is declared. This will apply to air transportation executives whose countries may not be directly affected, for air transportation goes beyond frontiers and beyond high seas. War must devour any air business it can reach, and no air transportation executive can be in the business very long before this will loom as a vital matter to his airline. Whether he is altruistic or not, your airway president or director must become either a peace advocate or a traitor to his business.

This may be termed the inside point of view, and it will be found in air transportation men whose project has attained a status justifying classification as a general transportation business. I found it especially fixed in the minds of the executives of the Deutsche Luft Hansa Company, although they were

not actuated so much by purely selfish interest as through a conception from experience of a sweeping away of artificial barriers and prejudices through ignoring of these limitations by air commerce. Otto Merkel, director of the Deutsche Luft Hansa system, sees this with the vision of an economic statesman. A "barrierless Europe," and consequently a peaceful Europe, is his obsession, and he preaches it constantly and vividly as a missionary for air commerce. He and his fellow Luft Hansa directors are emphatically for peace, and do not see the commercial airplane as a military potentiality at all.

This expert viewpoint, although certain to be powerful in opposing any plans for war and to be reckoned with as a lever for toppling war gods over, is not so great a peace factor as that which air commerce is beginning to contribute through its wide range of operation, its ignorance of frontiers and petty boundaries. This is impressed upon every air traveler by his experience. Men may conduct business or women may shop today in Europe by crossing in one day four or five countries to reach a city they would have regarded as almost inaccessible three decades ago. This sort of travel is becoming commonplace in Europe, where the everyday acceptance of air travel is especially noticeable. The German people recognized this situation early because they approached the airplane from an entirely different

mental attitude than that of Americans, who considered the airplane as a bird of sport, outside of its war uses, and not as a vehicle of commerce. Our pacific development of aviation was started overnight when a boy's vision spanned the Atlantic and his dream was translated into an action which the people of the streets could understand and interpret. The German people did not need this spectacular shift.

Air transportation, in the minds of its users, not merely brings cities formerly regarded as afar close to other cities, but it compresses the distances of nations so that the old barriers appear ridiculous. Europeans are conceiving this, for every air trip emphasizes it. I found an astonishing impression of this sort one summer when at three o'clock on the wings of the morning I left Berlin in a Luft Hansa airplane, saw the sun rise from the air, crossed Poland, breakfasted in Danzig and was in time to deliver an early morning lecture at the University of Königsberg in that famous old city of East Prussia. One may cross four countries of Europe in as many hours.

Inevitably, the European who has this experience acquires a new and better conception of his fellow-men, and those who were enemies before now become fellows and customers. Such experiences are not isolated, but are repeated day after day, and this constant touch with other nationalities destroys politi-

cal illusions and tears down barriers. The influence of the airway in this respect is very evident to anyone who will fly over the European schedules. When well established it is certain to forward peace as no other influence has ever done, for the patrons of the airways abroad are not merely the officials and persons of prominence—the effect is directly upon people. Men and women of ordinary stamp mingle with the more prominent and wealthy on the airlines, and the effect is the same. Diplomats and politicians may frame plans, but today they cannot put them into action by command as in the past. They must impress their peoples through a knowledge of the changes or action proposed; in Europe this is difficult to accomplish.

Every nation and every land in the world must feel the new spirit of air conquest as the world passes from the exploring stage—as shown in the flights of Keith Smith, Alcock, Lindbergh, Cobham, Byrd, the Norge airship men and others—to the transportation stage of flying. Airways will bring home to everyone the possibilities of air travel, uniting intercontinental points as well as international termini. The net result will be toward a passing of artificial lines and a leveling of barriers, a breaking of isolations, and the prejudices and hatreds of the past will be lessened.

Europe is in the early morning of the Air Age,

while in America the dawn is just beginning to break. Perhaps, with the absence of restrictions and the greater expanse of country, we will go forward in America with greater rapidity than any other country. When our expansion in air commerce justifies we can reach out to negotiate a new international understanding, adopting an attitude which will demand new respect from every nation in the world. This applies to our relations in the Pacific Ocean, and especially to a new understanding with Japan. The flight of our aviators around the world was misunderstood by Japanese statesmen, who took it purely as a military gesture. It started them on the building of the second greatest militant air force in the world. Their conception was solely in relation to war preparedness.

This is a mistaken attitude, but Japan cannot well turn to air commerce without the cooperation of some other nation, and such a cooperation may be extended from America for the peaceful conquest of the Pacific. We can well ask the question of Japan: Why are you arming so rapidly in the air? Against whom is your great air fleet to be directed? Our national policies may not have coincided—you as a nation may have ambitions in Asia with which we are not wholly in accord, but they are questions which can be propounded around the peace table rather than through war. We were the first to sponsor your entry into

the family of nations, we recognize your national aspirations, we sympathize in your problems, we are friendly toward your people; there is no reason why we should be hostilely arrayed against each other. Let us use aircraft as a medium of communication between our peoples. Then you will understand what our motives are; then we can be of great aid to each other.

The germinal idea is taken from the new economic statesmanship of Germany. It can be presented by the United States to Japan to produce a great constructive amity as opposed to that policy of England to play one nation against another in order to further her own trade supremacy. No greater advance toward the peace of the Pacific could be made than by uniting to achieve transoceanic air commerce between the United States and Japan.

A third influence of the airmen for world peace may be developed in international establishment of a worldwide air patrol which, like municipal police systems, will combine traffic regulation with a general protectorate in the air. Kipling sensed this some years ago, and today it is in line with our desire for peace and can supplant in time maintenance by individual nations of large standing armies and navies for the destruction of other nations. If the air forces of the so-called civilized nations were united in an intercontinental police air protectorate instead of

being kept up exclusively to war with one another, the world would have a most effective departure away from the road to future warfare.

Much preliminary work to this end has been accomplished in the formulating of international air commerce standards since the world war. Air traffic zones around the world will be established in the next decade, and enforcement of the regulations therein must be by some international method. This can be made comprehensive enough to establish a worldwide air police system and to include a method of reducing the various national war-making departments so that we may in time arrive at disarmament in fact. As air commerce spreads around the world it should carry with it a substitute of a worldwide nature to supplant the nationalistic war-making machinery. The international air patrol can be projected to do this.

We have already had evidence of the speed with which the airplane can bring good feeling in the peaceful missions of Lindbergh, which gained more for this country and developed more good will in Europe and in Mexico than all other means combined in recent years. While abroad last summer I heard numbers of men in high political places in France, Germany, England and other countries give decided expression to this view. The airplane is properly a messenger of peace, and the air commerce systems, working on this standard, will have tremendous effect

in promoting peaceful relations. With radio, which also knows no frontier, air conquest must be used for the good of mankind and not for its destruction.

The destruction of races may have a dramatic appeal to unthinking youth, but the sober judgment of more mature minds will bring to the consciousness of all peoples the fearful consequences of perverting new contributions of science to the orgies of national killings called warfare. These new developments of the air courses will do much to change the minds of men from destruction to production.

No doubt they are preliminary to further discoveries of great constructive value. Aurivision makes it possible for one to see and hear simultaneously, and we have motion pictures utilizing this principle. Perhaps we are close upon the discovery of thought transmission as well; if so, the coming intercourse of minds will bring the realization of the futility of war. The ideals of race have not kept pace with scientific inventions, but closer everyday intercourse throughout the world will make inevitable a worldwide friendship. The near future will see barrierless nations of the world united by the new discoveries of science and welded into united nations through the principles of the New Freedom.





NHMRL0022328